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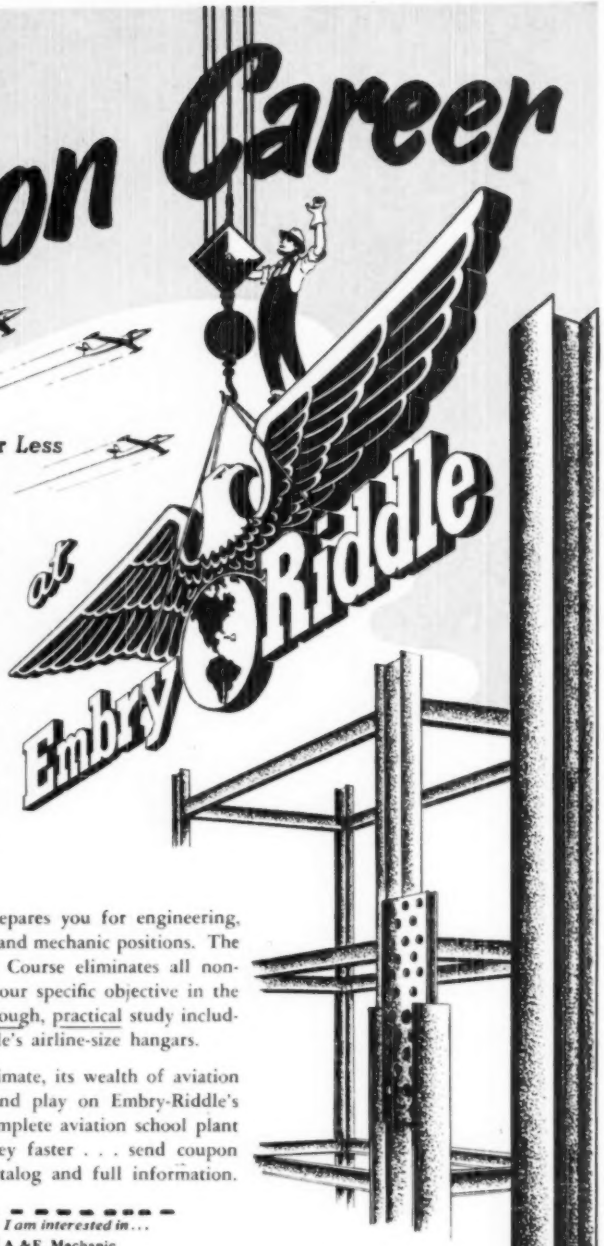

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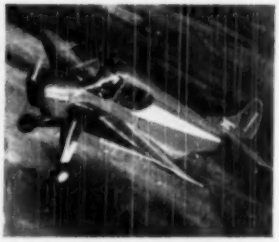

THE COVER: Experimental Lanier Paraplane has flown about 100 hours. (See page 25.)

EDITORIAL

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NEW YORK (17)
366 Madison Ave.
MUrray Hill 7-8080

LOS ANGELES (14)
815 S. Hill St., TUcker 9215

FLYING

Trade Mark Registered U. S. Patent Office, Nos. 321,411 and 523,406

OCTOBER • 1950

THE WAR
Korean Dogfight — Pilot "X" — 15
The Problem of Our Jets in Korea — Robert McLarren — 20

MILITARY AVIATION
How to Join the Air Forces — G. T. Kellogg — 16
The Low and Slow Air Force — Ed Hoadley — 26

CIVIL AVIATION
Twenty Thousand Pilots Down on the Farm — Bill Renshaw — 18
The Plane That Lands Like a Parachute — 25
Pennsylvania's Nudist Airpark — Donald Johnson — 28
FLYING's Check Pilot: Piper PA-20 Pacer — Ben Robin — 30
Uncle Sam's Aviation Library — 32
Four-Place Training — George R. Reiss — 34

HOW TO FLY
Cruise Control For Private Pilots — Max Daggett, Jr. — 24

PERSONAL EXPERIENCE
The Pilot Who Found Gold in the Jungle — F. M. Nier — 22
I Learned About Flying From That! No. 131 — Robert F. Meckoll — 38

PHOTO FEATURE
Have You Seen? — 35

SHORT FEATURES
The Mail Box — 7
Notes on Civil Flying — 8
Military News — 10
Flying Farmers, U.S.A. — Bill Renshaw — 12
AOPA News — 40
Flat Spins — Harold Helfer — 42
Civil Air Patrol Wing Talk — 44
Logging Time with Hy Sheridan — 46
Betty Skelton's Notebook — 48
Can You Spot Them? — 50
The Library — 54
Fifteen Years Ago — 56
Jet Lingo — 58
A FLYING Tip — 59

PHOTO CREDITS — 63

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ZIFF-DAVIS PUBLISHING COMPANY
185 North Wabash Ave., Chicago 1, Ill.

Member of the Audit Bureau of Circulations
VOLUME 47 • NUMBER 4

FLYING is published monthly by Ziff-Davis Publishing Company at 185 N. Wabash Ave., Chicago 1, Ill. SUBSCRIPTION RATES: In U. S., Canada, Mexico, South and Central America and U. S. Possessions, $3.00 for twelve issues; in British Empire, $4.00; all other foreign countries, $4.00 for twelve issues. Subscribers should allow two weeks for the change of address. Address all subscription letters to the Director of Circulation. FLYING, 185 North Wabash Avenue, Chicago 1. Entered as second class matter, September 8, 1942, at the Post office, Chicago, Illinois, under the act of March 3, 1879. Entered as second class matter at the Post Office Department, Ottawa, Canada. Contributors should retain copy of contributions. All submitted material must contain return postage. Contributions will be handled with reasonable care, but this magazine assumes no responsibility for their safety. Accepted material is subject to whatever adaptations and revisions are necessary to meet requirements. Payment covers all authors', contributors' and contestants' rights, title and interest in and to the material accepted and will be made at our current rates upon acceptance. All photos and drawings will be considered as part of the material purchased.

On the way!

Here is the famous Convair Turboliner equipped with Allison T-38 Turbo-prop engines. Preliminary tests of the plane soon will be completed at San Diego, California.

On the way!

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● Always a pioneer and leader in the development of new, more powerful fuels for conventional engines, Phillips again is breaking trail in the development of fuels for turbo-prop engines.

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66

AVIATION PRODUCTS

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Defense Is All the Time

A great airplane is more than swept-back wings and a Mach number.

It is a product of plans and planning . . . of vision and action . . . of ingenuity and skill.

It begins with America's determination to remain free. This ideal, forever foremost, requires a vigilance, forever active. It inspires our Air Force to constant research and planning. It stimulates American industry to unmatched invention. And it draws from free American labor vastly superior skills and energies.

But, above all, a great airplane is the product of time—time in research, time in planning, time in designing, developing and building. You can't put time in moth balls, nor buy it back from surplus. Today's new planes were yesterday's plans. Tomorrow's Air Force is being planned today.

Defense is a constant challenge, efficiently accepted and dynamically answered by the U. S. Air Force. The Lockheed F-90 Jet Penetration Fighter, ready for production today, is the product of planning that began more than five years ago.

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THE MAIL BOX

THREE PILOTS SPEAK UP

After reading the operator's viewpoint ["How Much 'Service' Can Operators Afford?", August FLYING], we'd like to present the views and reactions of the private pilots.

. . . We have landed at the gentleman's airstrip. Here's our experience—without a stop watch. We taxied to the line with no help from anyone. We hunted for some minutes to find someone to sell us gas. No tires were tested. No one offered to wash the windshield and it wasn't done. We spent no time in the social amenities. We were not impressed with the operation . . .

. . . Some operators just can't realize the gravy train is over and it is time to cut expenses to the bone; maybe even peddle the gas themselves. We have watched other businessmen in this situation—they took on other lines, rendered more service to the public, came up with ideas to get business. They're go-getters and they are still around . . .

C. R. DUNBAR
L. C. BARTELL
M. L. HARDY

Tacoma, Wash.

THE BUZZ BOYS

No matter how many articles are written pointing out the dangers of buzzing ["Pilots Who Buzz Are Born to Die," July FLYING], the darn fools never seem to learn. Every pilot who buzzes anything, anywhere, anytime, should be grounded for life; they have no business in an airplane.

H. J. MORRIS

Orlando, Fla.

Just read your article on buzzing . . . who thinks up such rot I don't know . . . No ruling covers everyone and just because of a few damn fools the rest of the flying public is hardly up for sentencing.

Around large cities and over residential areas, the comments undoubtedly hold true, but over terrain such as we constantly operate, it is a lot of hog wash. The psychiatrists are just as nutty as the author . . .

. . . There is a lot of land west of the Ohio River and many districts just aren't in the same class as the over-populated areas east of this same river.

Though I was not a member of the armed services one must remember that many of the pilots trained for those services were taught to buzz, and kill while doing it. Perhaps some have not been rehabilitated?

Your articles and comments on hypnosis were excellent. Snow storms are excellent mediums for producing the same reaction.

On the whole I enjoy FLYING, but just couldn't let the "Pilots Who Buzz Are Born to Die" hooey get by without a comment.

V. D. TRAKOWSKI
Alaska Scenic Air Service

Seward, Alaska

● If Reader Trakowski will read the article again, he will see that we were condemning "buzz" pilots as such, and not bush pilots who fly over the Alaska wilderness. Buzzing, as the term is generally understood, involves the wilful, premeditated act of diving an aircraft close to the ground—without logical justification. As our article pointed out, 44 per cent of buzzing accidents are fatal—and more than half of these accidents killed innocent victims. It's hard to argue with facts and figures.—ED.

HUGHES FLYING BOAT

We have been having a hot argument here at Arkansas Tech about what has happened to the Hughes Flying Boat.

I say they are still experimenting with it . . .

CHARLES A. L. FORE

Russellville, Ark.

● The huge Hughes Flying Boat (note size of men at lower right) is at present in its dock at Terminal Island, Long Beach Harbor, Calif., in preparation for additional water taxi and flight tests. At presstime, a date had not been set for resumption of these tests.—ED.

A TOUCHING SUBJECT

"Does Flying Hurt Virility?" [August FLYING] was fine, but Sheridan was flying a reciprocal heading. Virility is a touching subject but let's stick to the facts; pilots are sterile only between their ears.

J. SUITER

Miami, Fla.

Every pilot I have known has been worried about his virility. Most of the worrying was done when the shortage of women was most acute. . .

Keep Hy's typewriter well oiled. He handles it as well as he does a plush job.

JIM CROOKS

Leominster, Mass.

MY TAKES OVER

Dear Captain Sheridan:

I'd like very much to learn to fly cross-country at night. But every time I mention this to my flight instructor (an ex-Navy pilot with approximately 4,000

(*Continued on page 64*)

NOTES ON CIVIL FLYING

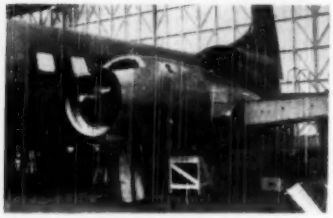
Kaman's Copter

Kaman Aircraft's new CAA-approved *Explorer* is a cabin-model helicopter powered by a 225-h.p. Lycoming engine and

will carry a pilot, two passengers and cargo. The pilot flies the craft from the front seat and the two passengers sit in the rear.

Convair Turboliner

A mockup Allison 501 (T-38) turboprop engine is being installed in the Convair *Turboliner* now being built at San



Diego for the Allison Division of General Motors Corporation. The lower scoop is for the oil cooler and the upper scoop is the air intake.

Radio Credit Cards

Wilson Radio Company, Fort Worth, Tex., with branches in Tulsa and Houston, has inaugurated what are believed to be the first aircraft radio credit cards. Company does extensive servicing business.

Aeronca Building Up

Aeronca recently was awarded Air Force contracts of over $1,300,000 for airplane maintenance stands and currently has total backlogs of over $3,500,000.

Navigation Revolution

"The classic methods of navigation are about to feel the impact of modern devices in servo-mechanisms, photo-electric devices, and electronics. Fully automatic celestial navigation is today within our grasp," Dr. Paul Rosenberg recently told the sixth annual meeting of the Institute of Navigation.

Speak Up Boys

Even if they don't know proper mike talk, private pilots should not hesitate to use their radios in dealing with CAA airways employees, says D. W. Rentzel, Administrator of Civil Aeronautics. "We find many flyers afraid to use their radios for fear they might use the wrong words and be reprimanded by the CAA. Nothing like that could possibly happen. Our communicators understand any kind of English. They'll answer any kind of English."

Seaplane Flyers

The Great Lakes Seaplane Association, Detroit, can already take credit for the establishment of a seaplane base at Detroit, though the Association is only 1½ years old. The Association also won acceptance for the idea of building ramps in the "harbors of refuge" which are being established at 40-mile intervals along the Michigan shores by the Michigan State Waterways Commission.

Work on NAA Revision

NAA has been revised to place complete control in the hands of the membership through local chapters. Directors have been instructed to draw up new by-laws which will be referred to the local chapters and adopted and put into effect by October 15. Present officers will serve until the new by-laws go into effect. The National Air Council reportedly has a committee working to see what cooperation it can develop with the new NAA organization.

It Can't Be Done

A vertical bank without loss of altitude is an impossible maneuver, warns W. H. Rodda in the July MAC Service Letter.

Bantam Eareceiver is "hearing aid" type of radio headset weighing less than one-half ounce. It is manufactured by Dave Rumph Company, P. O. Box 4178, Fort Worth, Tex. Price: $6.50.

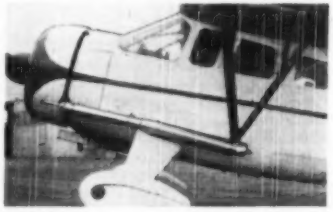
Seeing in the Rain

A new chemical called FC-10, manufactured by Fiberglas Canada, Ltd., Toronto, enormously improves visibility on rain-swept windshields. Windshields treated with FC-10 remain clear in the

hardest rains. One application usually lasts several months. The repellent does not shed ice but is undamaged by heat or alcohol and may be used on all types of glasses or plastics. Even oil is repelled by the material.

Engine Silencer

A new type of exhaust muffler which reduces aircraft engine noises approximately 60 per cent has been developed by Aero Sonic Corporation, 99 Murray



Street, N. Y. The basic design consists of a tube mounted within a tube, with a Venturi-shaped tail pipe to induce jet action in scavenging gases from the muffling chamber. Design for the 450-h.p. *Wasp Junior* is only 5 inches in diameter, 53 inches long and weighs 16 pounds.

Instrument Pilots are Safer

Only four out of the 255 pilots involved in fatal weather accidents during 1948 and 1949 held instrument ratings.

Another Name for GCA

CAA has awarded Bendix contracts for manufacture of radar units to be installed in 28 control towers in the U. S. and Alaska. The equipment includes 14 airport surveillance radars (ASR) and 14 precision approach radars (PAR). The latter are used to "talk down" planes—just another name for GCA, to which CAA is allergic.

OKAY—so you've got to land someplace!

We've told you lots of ways to avoid emergency landings, but let's assume you're coming down anyway.

Here are a couple of pointers that may write a happy ending to a very tight little situation:

1. If you've got any choice at all, pick a big hunk of clear space, even though the terrain may be rougher than that little parking lot across the road. A smooth surface doesn't help much when there's not enough of it to slow down in.

2. Be sure to land into the wind and, above all, to maintain your flying speed.

3. If you're heading into the shrubbery and it's apparent that you can't stop, aim the nose of your ship between a couple of trees so that the wings (not the fuselage) will absorb most of the shock.

Now let's see—two prize sycamore trees at $75.00 each; one section of wire fence, $30.00; one . . .

AND HERE'S ANOTHER TIP!

Now that you're up and around again, and contemplating a bit of flying—

Don't get caught with your oil pressure down!

There's nothing, positively nothing that will keep that little old engine happy like a crankcase full of Gulfpride Aviation Oil—Series D!

Ask any piston! It's the finest detergent dispersant oil there is for horizontally opposed engines—the only aviation oil put through Gulf's exclusive Alchlor process to remove those extra carbon and sludge formers!

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MILITARY NEWS

THE WAR IN KOREA

. . . **Air strength** in the Far East at the beginning of the war included 10 USAF combat groups: one B-29 group, five fighter groups (F-80 and F-51), one all-weather group (F-82), two light bomber groups (B-26) and one troop carrier group (C-54).

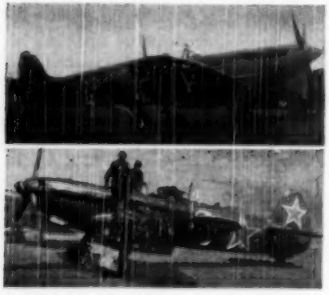
. . . **Parachute bomb** was devised early in fighting to blow up bridges. Five hundred-pound bombs were rigged with parachutes on their tails. Planes swept over targets at 500 feet, released the bombs and roared on. Slowed in their fall by the 'chutes, bombs did not hit the bridges until planes got away from blast zone.

. . . **Eight days** after two West Coast B-29 units got orders to leave the U. S. for the Far East, the giant Superforts flew in a 50-plane strike at North Korean installations. By nearest airline routes, the distance they had traveled to Asia was 5,500 miles.

. . . **An Air Force** spokesman estimates it takes 30 days for bombing of North Korean supply sources and communications lines to affect seriously the flow of materiel to the fighting fronts.

. . . **Communist troops** in North Korea have tried to confuse U. S. pilots by lighting smudge pots near their tanks when American craft approach. They apparently hope the pilots will think the tanks are already bombed and burning.

. . . **U. S. jet pilots**, flying near the speed of sound, have made diving attacks on British Supermarine Seafires, only to discover at the last moment that



the planes were allies. The Seafires, based on British carriers, bear a close resemblance to Russian Yak-9's flown by North Korean forces. The situation got so bad recently that the U. S. Seventh Fleet urgently requisitioned white paint—to put stripes on Seafire wings to aid identification. Note resemblance between Seafire, top photo, and Yak-9, bottom.

. . . **Grim world outlook** and Korean war sped U. S. decision to expand its air strength to 69 groups from its present 48. By mid-summer, 1951, the USAF should have 58 groups. Expansion had been urged long before Korean aggression, but had been blocked by Administration. (See "Are We Heading for Disaster?" June FLYING.)

. . . **North Korean** forces are reported using several Bell P-39's, given to Russia by the U. S. during World War II. About 4,000 of the planes were ferried to the USSR during the past war.

. . . **When war began**, Republic F-84E (standard USAF ground support plane) was grounded because of faulty No. 2 bearings in its Allison J-35 engines.

. . . **At mid-summer**, when the Korean crisis flared, the Air Force had about 1,000 B-29's and about 7,300 other planes in mothballs.

. . . **Limited British** naval help came quickly to United Nations forces in Korea. On July 5, Seafires and Fireflies from HMS Triumph, a British carrier, joined in a Seventh Fleet strike at North Korean targets.

FROM OTHER FRONTS

. . . **Jets based** in Alaska are on 24-hour alert, and could be airborne in from 90 to 120 seconds from first warning of approaching enemy planes.

. . . **Yak-21's**, Russian-built jets, have been reported seen over Shanghai bearing the Chinese Red Air Force insignia: a red star and yellow Chinese characters.

. . . **Northwest European** air defense plan is ready to operate. RAF fighter and control-and-reporting network is integrated with Belgian, Netherland and French air forces—all flying jets designed in England. Emanuel Shinwell, British defense minister, says Norwegian and Danish air forces, British Tactical Air Force in Germany, and RAF bomber command are also ready to defend Europe.

. . . **Fleets** of light rocket bombers like the Nazi Messerschmitt 163 interceptors should be used for close support of infantry, say some European experts. They would cost only about one-fifth as much as a typical jet fighter, the Europeans claim, and could be mass-produced.

. . . **Reports** from Communist China: (1) a Red radar net is established on China's east coast, (2) Chinese Communists have "at least" 400 planes, (3) the Reds have about 30 military airports in South China and along the Yangtze River.

HERE AT HOME

. . . **All four** of nation's leading engine manufacturers (Allison, General Electric, Westinghouse, Pratt & Whitney) are reported working on turbojets in the 7,500 pound thrust category.

. . . **One month** after war started, Navy announced plans to pull three large and six light carriers from mothballs. Already in service are seven large carriers and eight light carriers.

. . . **CAA** is conducting survey of civil aviation industry to check its possible role in a partial or total mobilization.

. . . **Col. Paul W. Tibbets, Jr.**, pilot of the B-29 that dropped the atom bomb on Hiroshima, is directing a test program at Wichita, Kan., to determine the Boeing Stratojet's "operational capabilities."

. . . **Navy** has ordered "a substantial number" of Martin P5M-1 anti-submarine flying boats. The new craft, called the Marlin, has a long afterbody

and a single tail vertical stabilizer. It carries a seven-man crew, is powered by two Wright 3350 engines.

. . . **Joint** Air Force-CAA board will develop system for identifying friendly aircraft, plan for channeling data to air defense control centers and interceptor stations. Board will also study means of using CAA equipment and personnel in event of major national emergency.

. . . **Three jet fighters** have been given new designations by the Air Force. The Republic YF-96A, sweptwing version of the Thunderjet, is now the F-84F; the North American F-95A, interceptor version of the Sabre, is now the F-86D; and the Lockheed F-97A, two-place jet interceptor, is now the F-94C.

WHAT THEY SAY

. . . **Said Gen. Hoyt S. Vandenberg**, Air Force chief of staff, one month before the North Korean invasion: "The strength of our Air Force at the present time is not sufficient to continue an all-out air war lasting more than a few months. The lowest loss rates that can be predicted would consume our first-line combat planes in a short period of heavy operations."

. . . **Says Lieut. Gen. George E. Stratemeyer**, Far East Air Force commander: "I am awfully proud of those jets; they have done things damned near unbelievable."

. . . **Says Francois Perrin**, France's joint commissioner for atomic energy: Russia's spies have obtained "know-how" to make the hydrogen bomb. But "the United States is the only nation capable of manufacturing the H-bomb and still maintaining a normal economic standard."

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*for only $595.00**

Everywhere the big swing in aircraft radio is to the LEAR Omnimatic because it is the easiest, the fastest, and the most truly *automatic* method of navigating the omniranges. "The LEAR Omnimatic," says Leighton Collins, editor of AIR FACTS, "throws out all the mental juggling. It *tells* you your bearing. You don't think. You just tune in the station and hit the navigational jackpot."

Thanks to a substantial reduction in the price of the Omnimatic, plane owners can now also hit the *economy* jackpot. A complete LEAR omnirange navigational and VHF communications system is now available for only $595.00,* giving you automatic, continuous, and instantaneous magnetic bearings from your airplane to the station...telephone-clear reception of all VHF towers and radio ranges...and six frequency, static-free VHF transmission (three crystals supplied). Send for free descriptive booklet.

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SOLID SOD

Muddy runways that prevent air traffic cost airport operators a pretty penny every winter. Even with good drainage most sod fields are impassable when the frost is going out of the ground. Runways need not be closed by freezing and thawing, however. The Halsmer Farm Airport, a few miles east of LaFayette, Ind., has whipped the problem with Alta fescue, sown in a good seed bed with plenty of commercial fertilizer.

Francis Halsmer eliminated muddy runways at airport by sowing fescue seed.

When the three Halsmer brothers (all military pilots) came home from the war and decided to turn part of their farm into an airport, the first question was: "How do we get runways that will hold up winter and summer without spending a fortune?" With Dr. G. O. Mott, pasture specialist from nearby Purdue, supervising the application of fertilizer and seed bed preparation, the runways were seeded in April, 1946. Flying off the new runways was started in June and not a day has been missed, winter or summer, since that time—that's how good the sod is.

In seeding new airways Dr. Mott recommends 40 pounds of Alta fescue and 12 pounds of Kentucky blue grass per acre. An application of fertilizer with at least 40 pounds of nitrogen per acre is a must. Dr. Mott urges that the soil be tested to determine just what is needed, adding that his blanket recommendation would be 500 pounds of 8-8-8 per acre.

A good seed bed is also necessary if a good sod is to be built up in a hurry. Final preparation can best be made by going over the soil with a culti-packer seeder, both ahead of and behind a cyclone seeder.

* * *

MORE TAXES?

There are many indications that Flying Farmers are about ready to vote aviation fuel taxes onto themselves if the money thus collected can be earmarked for the building of landing strips.

A poll of more than 200 Flying Farmers attending a recent meeting in Indiana, showed that more than 65 per cent favored such a tax. Other states are keeping a careful watch on Indiana, where William Mollenhour of Warsaw, Ind., a radio and newspaper man, is conducting a whirlwind drive for an aviation tax to be used for the benefit of private pilots. Mollenhour, who is also a member of the State Aeronautics Commission, is making numerous speeches on the subject and is rallying considerable support for the Flying Farmer proposal. The gas tax idea is opposed by Straley Thorpe. Thorpe, an attorney and legal counsel for Flying Farmers, is opposing the tax in speeches he is making, largely on the grounds that the amount collected would be so small that it would take forever to build the strips needed. Thorpe contends that landing strips and airports should be built out of the general fund.

Indiana flying farmers have called for a poll of the entire membership on the proposed tax. If a clear majority favors it, legislation to put it into effect will probably be drafted and introduced in the General Assembly which meets in January.

* * *

MICHIGAN SKY LODGE

Michigan Flying Farmers have built themselves a lodge which they can reach easily with their airplanes, but would probably never visit by auto.

Located in a beautiful pine grove on Lost Creek Sky Ranch, the lodge was built largely by Flying Farmers, who are pretty handy with tools.

High ranking visitors at the recent dedication were Michigan's Governor G. Mennen Williams; Bert Hanson, vice-president of the National Flying Farmers Association; and Jack Reese, president of Continental Motors.

Michigan Flying Farmers also did a good job of selling industry on the role they are playing, when 100 of them invaded Detroit recently. Earl Gehman, President of Michigan FF's, says, "We got a better picture of what industry's problems are by touring some of the plants." Plans are under way to make a trip to the automobile city an annual event.

* * *

JUST OLD ENOUGH

Four grandpappies quartered in the same room at one of our recent Flying Farmer events, disputed the theory advanced by the president of a prominent lightplane company. Said this president in a recent speech, "When people get to the place where they can afford to fly, they're too old to be interested." Average age of our grandpappies, who were quartered together by accident, was 57. All are pilots. Oldest of the group was a youthful 61.

We know of at least a dozen flying farmers who are in their 60's, and most of them learned to fly after passing the three score mark. They're convinced that flying helps keep them young.

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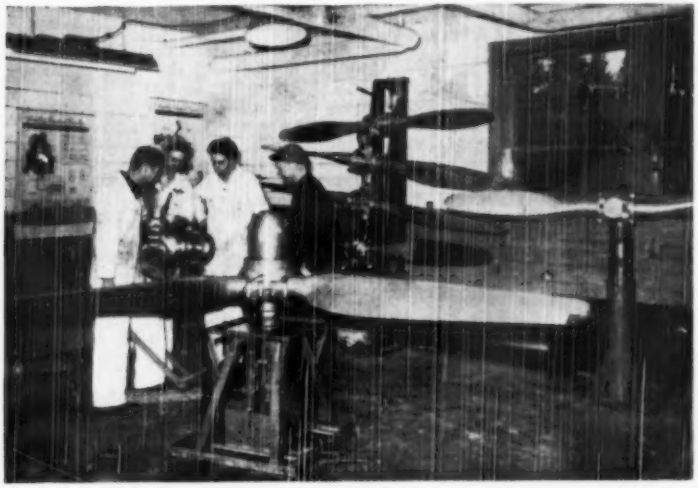

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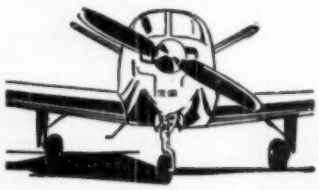
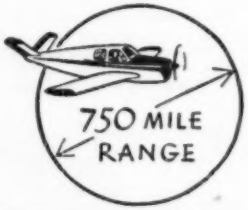
You make more calls when you cruise at a 170-mile clip. No wasted time, no wasted effort. Travel *means* more! Minutes in the air pay you back with hours of productive time.

You get to *where* the business is in luxurious comfort. Room to spare for four big people in the smartly tailored, quiet Beechcraft Bonanza cabin. Maximum 5-way visibility.

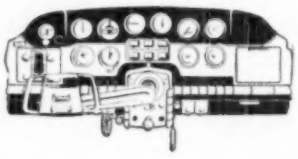
You travel in safety. The B35 Beechcraft Bonanza is extra rugged, withstanding shock and stress tests far surpassing CAA requirements. All-metal construction.



You get top performance. Flight characteristics make it exceptionally easy to handle. Speed, range and fuel economy unexcelled! Wide, sturdy landing gear smooths out short, rough-field landings.



You get amazing efficiency. At cruising, the Beechcraft Bonanza uses only 56% of the engine's rated take-off horsepower! And fuel consumption is low—amounting to only 9.5 gallons per hour!



You enjoy many extra features. For instance, a functionally designed instrument panel, highly efficient . . . but handsome, too! Touches of luxurious comfort everywhere—even to coat hangers, ash trays, map pockets!

Get all the facts! There are hundreds more . . . about the extra advantages of the new Model B35 Beechcraft Bonanza. Check with your nearest Beechcraft distributor or dealer, or write for complete information on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles
Fuel economy, 9.5 gph

Beechcraft
BONANZA

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

FLYING
VOLUME 47, NO. 4
OCTOBER, 1950

KOREAN DOGFIGHT

By PILOT "X"

Who is Pilot "X"? Because of military security, General MacArthur's headquarters requested that his identity be withheld by FLYING.

'We were all over the place, giving 'em hell,' says pilot who shot down a Red bomber.

A FIFTH AIR FORCE BASE SOMEWHERE IN JAPAN —We arrived over the airfield at Suwon and were circling overhead, forming a protective cover for the transports we had escorted from Japan. Suddenly we spotted six red-starred aircraft. They were three North Korean IL-10's, one LA-7, an SU-2 bomber, and what looked like an old P-63—the Bell *Kingcobra*.

They were coming in towards the base from north-northwest. The IL-10's and the LA-7 were in formation and the two other aircraft were flying top cover. We were at 7,000 feet and they were about 2,000 feet above us. I gave the signal to drop tip tanks and we attacked them.

I was in the lead ship and Lieut. Harry Sandlin of Washington, D. C., Lieut. Orrin Fox of Pasadena, Calif., and Lieut. Richard I. Burns of Akron, O., made up the rest of my flight. We had taken off from Japan about 1300 to escort some C-54's, C-46's, C-47's and C-45's carrying ammo and supplies across. It was also the day General MacArthur was scheduled to arrive in Korea.

On June 26th and 27th, I had flown three missions in F-80's as cover for the big transports evacuating Allied personnel. I had found no opposition and I saw no foreign aircraft.

But now in the *Mustangs* it was different. We barreled into the approaching red-starred (*Continued on page* 63)

Navy Reserve Fighter Squadron VF 781 at Los Alamitos Naval Air Station volunteered 100 per cent to leave their civilian jobs for active flying duty aboard a carrier. VF 781 is one of several reserve units the Navy has called up for active service.

HOW TO JOIN THE Air Forces...

The Reserves are coming back and the enlistments of non-vets are welcome.

Lineups before enlistment offices and draft headquarters are being repeated as the armed forces expand personnel during crisis.

Young men registering for draft can still enlist as airmen. They can apply for cadet training but must risk being called up first.

Future Marines are former Illinois National Guardsmen, 30 of whom joined Marine Corps en masse when the Korean hostilities began.

By G. T. KELLOGG

YOU DON'T NEED to pull strings or wheedle influential friends if you want to get into the Air Force, Air Force reserves, Air National Guard, Naval Aviation or Naval Air reserves.

If you can meet the requirements—and they're not too stiff for most young Americans—the services are ready to use you in the international clean-up program now in progress.

All services within the Department of Defense have set up pretty definite requirements for entering the service—or returning to it. A World War II combat pilot won't be given a gilt-edged contract assuring him that he'll again jockey a plane in the Far East—but it's "extremely likely" that requests of trained specialists in critical occupations (including those in the air arms) will get favorable hearings.

And what's more important—but, let a Defense Department spokesman tell it: "The background and training of enlistees are being considered carefully under the Department's policy of placing round pegs in round holes wherever possible. That is, there will be fewer accountants assigned to the kitchen than was the case in World War II, and radio technicians won't be put to work driving trucks."

To get in the Air Force's aviation cadet program, you must be between the ages of 20 and 26½ years and have completed two years of college. In addition, you've got to pass satisfactorily the aviation cadet qualifying examination—plus, of course, the physical exam for flight service. There's a possibility that the qualifying exam may be relaxed somewhat as the need for pilots increases.

As FLYING went to press, there was a delay of about three months for pilot training and about one month for navigator training between time of application and date of entry into the cadet program.

The Air Force has sent out a call to civilian flight training agencies to train some of its aviation cadets in basic flying. Bids will be accepted from these flight schools; any of them interested in bidding may get detailed specifications from the Contract Relations Section, Procurement Division, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, O.

The Navy's aviation cadet program requirements are: (1) citizenship (native born or 10 years naturalized), (2) age between 19 and 25, (3) four years of college, and (4) meeting of mental, moral and physical standards.

Pay of ensigns and second lieutenants begins at $180 per month, plus allowances amounting to over $100 per month (if married). In addition, 50 per cent of the base pay is received as flight pay, making the base pay $270 instead of $180.

If you're a pilot, but have no previous military experience, you can apply for a commission in the Air National Guard provided you are within the age limits, have graduated from an accredited flying school within the past two years, or have been flying continuously for that period.

To join the Air Force or Naval Aviation as an enlisted man, you must be between the ages of 17 and 31, and must state your preference for branch of service at the recruiting station. Naturally, military necessity governs the assignment you will draw (whether Air Force, Navy, Army or other branch) but other things being equal, applicants get their choice of duty. You must, of course, pass proficiency exams and qualification tests.

Unofficially, Navy personnel say the best way to be assured the job of your choice is to enlist in a reserve unit. Then, having entered, request active duty in that branch.

Civilians not in reserve components may make application for specialist commissions in any branch of the service. Requirements are lengthy, but they can be obtained from any Army, Navy or Air Force recruiting office. Air Force Regulation 45-19 covers these requirements fully.

The Department of Defense has outlined its policy for the recall of reserve personnel to active duty. All branches have started a limited recall of reserve personnel. At the same time, they have announced that voluntary return to active duty by individuals will be welcomed. Whether recalls to active duty will become involuntary on a reserve-wide basis is, of course, largely dependent upon developments in Korea and other parts of the world, as well as upon the volume of voluntary returns to active duty.

Both Army and Air Force early assured all reserve officers that their return to ac- (*Continued on page 62*)

Medical requirements are still strict for pilots. Qualifying exams, however, may be relaxed somewhat later if demand increases.

Enlistees are sworn in in New York. Victor S. Sacco, Astoria; Andrews S. Kelsey, Scarsdale, and Milton Goldstein, Baldwin, the first three in line, are re-enlisting as air cadets.

20 Thousand Pilots DOWN ON THE FARM

FLYING columnist Bill Renshaw is secretary of the Indiana Aeronautics Commission. He has been flying since 1929, has logged over 1,100 hours in his Ercoupe in past four years. One of nation's best-known Flying Farmers, he is executive secretary of Flying Farmers of Prairie Farmer Land. He has been employed for 30 years by the Prairie Farmer, America's oldest farmpaper.

America's Flying Farmers are private flying's top boosters—and customers.

By BILL RENSHAW

"WHAT BUSINESS does a farmer have with an airplane?" That question was put to me in November of 1945. I had just written an article about a half dozen farmers in Vermillion County, Ind., who were learning to fly and had airplanes on order.

A banker friend who had read the article posed the stickler. Two days later I passed his question along to my Vermillion County friends. The first man I asked was Ellis Volkel and his answer was a classic: "As much business as our fathers had with an automobile a generation ago," Volkel said.

He spoke from experience. His father had the doubtful honor of owning the first automobile in his township way back in 1902. There were no hard-surfaced roads, no filling stations or repair shops. Consequently there was little utility in that early automobile. The derisive shouts of "get a horse" that Ellis heard as a boy were more than taunts. The early automobile manufacturers even left the whip socket on the dash-boards of their converted buggies.

Today with the automobile an indispensable fixture in farm living, Ellis Volkel and hundreds like him are having to explain that farmers do have "some business owning airplanes."

Actually, there are many parallels between the farm automobile and the airplane.

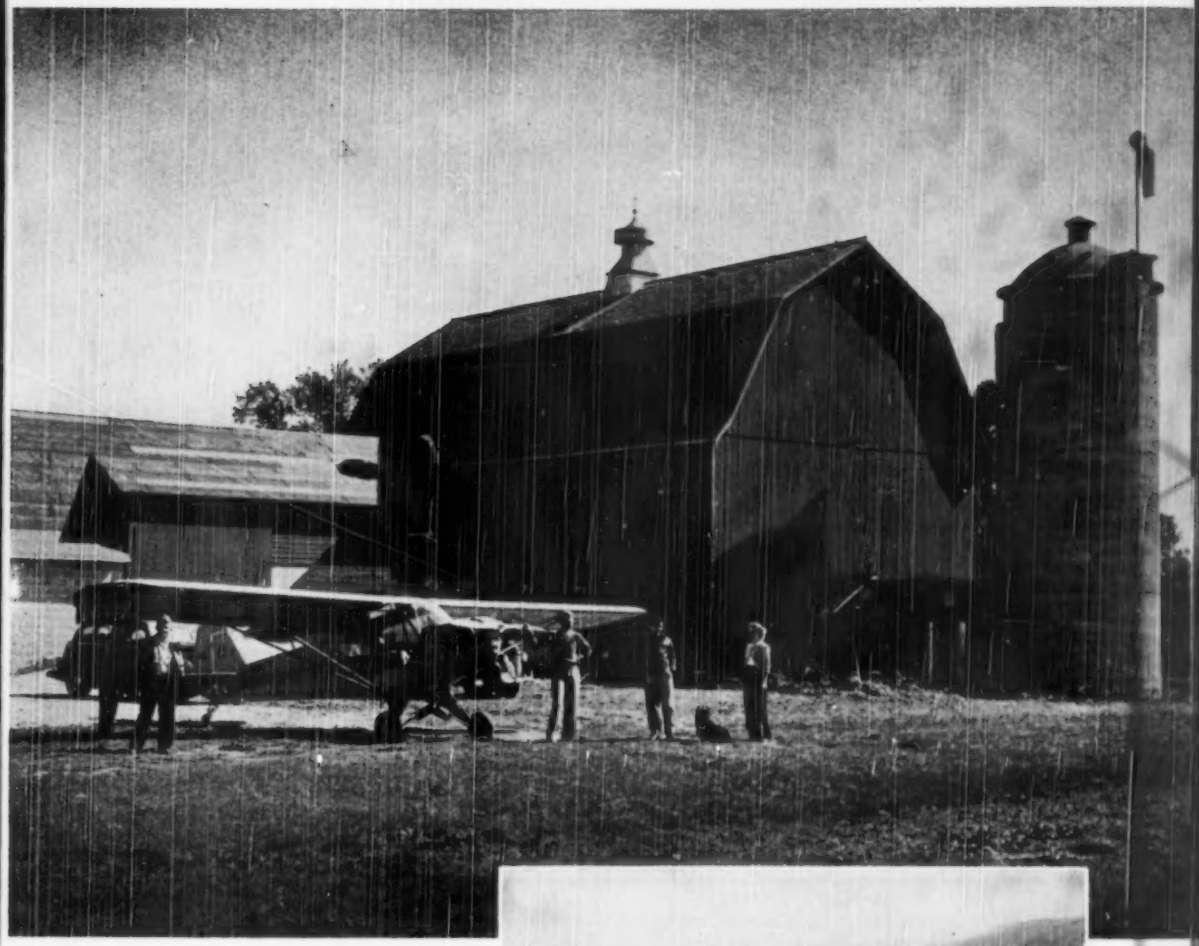
The automobile has been followed in rapid succession by electrification and almost complete mechanization of the farm. Time and labor saving conveniences have brought a new freedom to the farmer and his family. Farm folks look with pleasure on any machine that advances their campaign for "better rural living." They are convinced that the airplane does that. It is another big step along the hard trail up from the peasantry of yesterday.

Farmers have long had their hopes (*Continued on page* 53)

One of first Flying Farmers, Roderick Wright (left) talks with Airport Operator Ray Clark.

Ohio's FF president, Ralph Young, serves with the state aviation board.

Monument to FF movement is big sign on barn where first Flying Farmer built plane in 1909.



Planes are commonplace on nation's farms, with almost 20,000 farmers holding pilot licenses. Above farm, located halfway between Fort Atkinson and Jefferson, Wis., was turned into airport. Navion (right) stirs air to keep frost from wheat.

Visitor Hobart Creighton gets big welcome at Indiana State Fair on first Flying Farmer Day.

F-80's in Korea now have wingtip tanks holding 95 gallons more each than the tanks in problem below. Extra fuel would give 20-25 more combat minutes, but the basic problem is little changed.

F-80's Combat Radius Is Only 210 Miles at Sea Level. It Is More

40,000 FEET
?
20,000 FEET
FLYING AT SEA LEVEL
TAXI, TAKE-OFF, CLIMB OUT TAKES ..... 600 LBS.
CRUISE AT 450 M.P.H. FOR 56 MINS., TAKES ..... 3,400 LBS.
15 MINUTES OF COMBAT ..... TAKES ..... 1,000 LBS.
• TOTAL ..... 5,000 LBS.
KOREA
SEA OF

THE PROBLEM OF
Our Jets in Korea

Our rugged F-80's can outfight anything they've met, but they do have the problem of range.

By ROBERT McLARREN

IF JET fighter speed can win an air war, the United States is years ahead of all the other nations combined. Our supersonic Bell X-1 is the world's fastest airplane. Our North American *Sabre* swept-wing fighter is the world's fastest combat airplane. It holds the official world's speed record of 670.981 m.p.h. but later models fly regularly at more than 700 m.p.h. and reach sonic speed in dives. But can speed win an air war? Preliminary lessons from the fighting in Korea seem to cast doubt on the answer to that question.

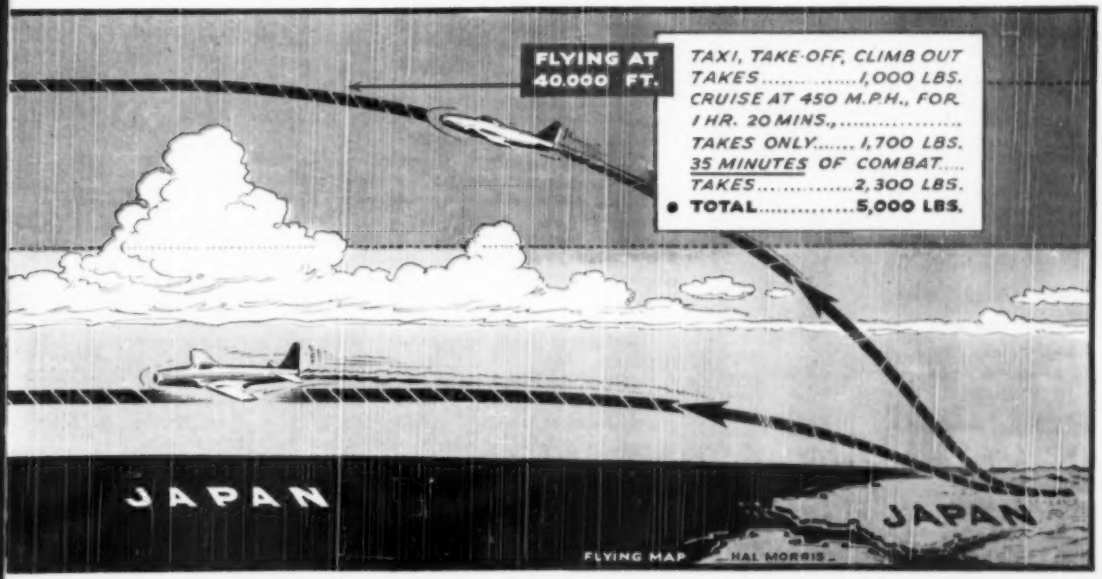
The Northern Red Koreans had hardly breached the mystical 38th parallel when Lockheed F-80C *Shooting Star* jet fighters of the Far Eastern Air Force at Itazuke Air Base, Kyushu, thundered across the Tsushima Straits and raced the 330 miles to the vicinity of Seoul in a matter of minutes. In the ensuing days these brilliantly white jet fighters scored again and again over the Russian-built Yak-9 piston-engined fighters.

But after only a few days of fighting the news began to trickle back that the jets were having difficulties: bad weather hampered their operation, their endurance was too short to permit the necessary patrols, their speed was too great to permit thoroughly "mixing it" with the Red fighters. The cry went out for more North American F-51H *Mustang* piston-engined fighters. Already in action, the North American F-82E *Twin Mustang* patrols were augmented as rapidly as possible. It was a piston-engined war!

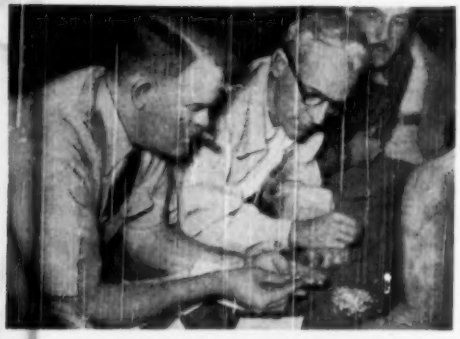
Does this mean that the Air Force has backed the wrong horse, that the jet fighter is good for breaking speed records but useless in combat?

The pure fighter is a defensive weapon—that's important. Its basic mission is to seek out and destroy enemy aircraft. That means that its design is based largely on the characteristics of the anticipated opposition. To catch an enemy aircraft requires speed—great speed—and that's (*Continued on page* 55)

At 40,000 Feet—But the War Is Not Being Fought at 40,000 Feet



Icabaru natives met Captain Baughan (left) when he landed in Luscombe. He was feted, dined—and laden with souvenir nuggets. Later, natives cleared the airstrip for pilot.



Fortune in diamonds is inspected by Baughan (left), who watched natives pick up stones strewn through workings. He is former TACA operations supervisor in Gran Sabana.

Jungle village had only 600 inhabitants when pilot landed. After airlift began, the population mushroomed until today Icabaru has 8,000 persons, a post office, and two theaters.

The Pilot Who Found Gold In the Jungle

By F. M. NIER

Crude diamonds and gold nuggets turn tiny village into boomtown.

CHARLIE BAUGHAN was shuttling through the Venezuelan air corridor from Ciudad Bolivar on the Orinoco River to Santa Elena on the Brazilian border. He was watching a drenching rain mat the jungle vegetation into a huge Axminster rug which, in a crash, would swallow both plane and pilot. He had no desire to conquer the underworld, its bushmaster snakes, its poison-arrow-blowing Indians. He was content to remain aloft and look at a rainbow which daily formed during rainy season—a rainbow at the foot of which he was to find the proverbial pot of gold.

As Baughan jockeyed the Venezuelan airline plane into a snug mountainous opening at Santa Elena, flap trouble developed. About 300 feet from the tiny landing strip, the flap-actuating mechanism gave way and the Douglas lolled over helplessly on its right side. Quickly raising the other flap, Baughan barely regained control before scudding into a landing.

Catching his breath, Baughan noted a larger than usual crowd at the thatched, tiny terminal; probably a full return load, he speculated. But having flown the corridor for only a couple of months, he was just getting acquainted with regional customs so it might be a Saint's Day celebration.

"Hola," he shouted. He slapped his belted pistols.

"It's the *capitan de los pistolos*," the frontier guardsman yelled.

"Look, Captain!" miners shouted, jubilantly displaying outstretched palms laden with gold nuggets and crude diamonds.

For a moment Baughan would have traded the Douglas and his job with TACA for a half dozen fists, except there was no other means of transport out of the so-called Green Hell. Never had he seen so much wealth concentrated in so few hands.

"Where is this El Dorado?" the incredulous pilot asked, stroking a newly sprouted mustache.

"*Muy lejos!*" the miners chorused. "Very far way. A place called Icabaru."

Its location, Baughan surmised (*Continued on page* 49)

Circling several times, he studied the slope, noting the thatch-roofed village and the gesticulating natives standing in a small clearing.

Cruise Control For Private Pilots

Here's how you can add miles to your lightplane's range.

By MAX DAGGETT, Jr.

Recently rated a liaison pilot at the Air Force Liaison Pilot School, Connally AFB, Tex., Daggett has been flying since 1945. He is a first lieutenant, Field Artillery, in the Arkansas National Guard, and has attended the Tactical Course for Army Aviators at Fort Sill, Okla. He is an aeronautical engineer, a graduate of the Massachusetts Institute of Technology. During past war, he served in the Navy.

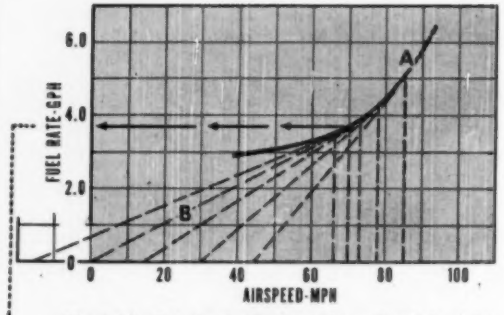


Chart 1A. First step in figuring cruise control is to plot a chart comparing fuel consumption with airspeed (see text).

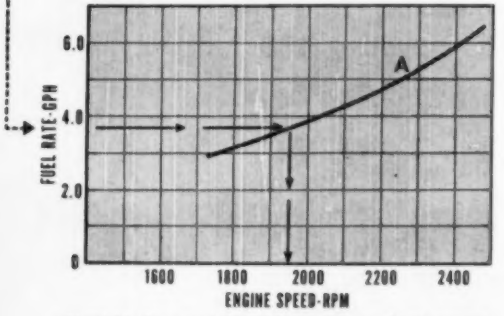


Chart 1B. On second chart, plot comparison of fuel consumption with engine speed. By using the two charts, you'll be able to figure the maximum range for any velocity headwind.

SEVERAL MONTHS AGO, I asked a *Cub* owner if he used cruise control. "You nuts?" he said. "Cruise control in a *Cub*?"

I wasn't nuts. I meant cruise control in a *Cub*. Or, for that matter, in *any* lightplane. Cruise control is sometimes as important to a lightplane pilot with fixed-pitch prop as it is to a *Superfort* pilot.

Ever had low scud roll in and obscure your home field? With cruise control in a lightplane you can often squeeze an extra hour's level flight out of your fuel supply.

Ever had a sudden wind shift cut your plane's range over rugged terrain? You can add miles to a lightplane's range by using cruise control.

Forget the idea of mathematical equations and complicated graphs and long-haired algebra. Cruise control technique helps you do just one thing: to cover the most miles per gallon of fuel. You can apply sound scientific cruise control technique to your lightplane flying by doing a little advance calculating with a pencil, ruler and coordinate paper.

Those hours will be well spent. The least they can save you is money. The most they will save is your life. Worth it?

Before you settle down with pencil and paper you'll need information on airspeeds, engine speeds and fuel consumption rates for your fully-loaded plane. Data for an altitude you commonly use and an average temperature will give results about correct for other altitudes and temperatures in the same neighborhood.

Now you're ready to start. Don't let the next few paragraphs fool you. They may sound a little complicated but if you tackle them sentence by sentence—doing the job with paper and pencil at the same time—you'll have no trouble.

For every engine speed there's a corresponding level-flight speed and rate of fuel consumption. Let's prepare two charts showing this. Chart 1A shows fuel consumption compared with airspeed, and Chart 1B compares it with engine speed.

Get two sheets of graph paper. Scale your fuel rates, bottom to top, at the side of each sheet of graph paper. Scale your airspeed across the bottom of Chart 1A and your engine speed across the bottom of Chart 1B. Both are scaled left to right as shown on the accompanying charts.

With the information you have from the manufacturer on airspeeds, engine speeds, and fuel consumption rates you will be able to plot the airspeed/fuel rates and the engine speed/fuel rates quite easily.

Just plot out four or five points for each rate on both charts. Then connect the points with a smooth curve. That is the curve marked A on both charts.

Next draw a straight line from the lower left hand corner (zero airspeed and fuel rate) of Chart 1A to a point tangent to the curve (just touching the surface of the curve). This is Line B. At the point where Line B is tangent to the curve, read the airspeed and fuel rate.

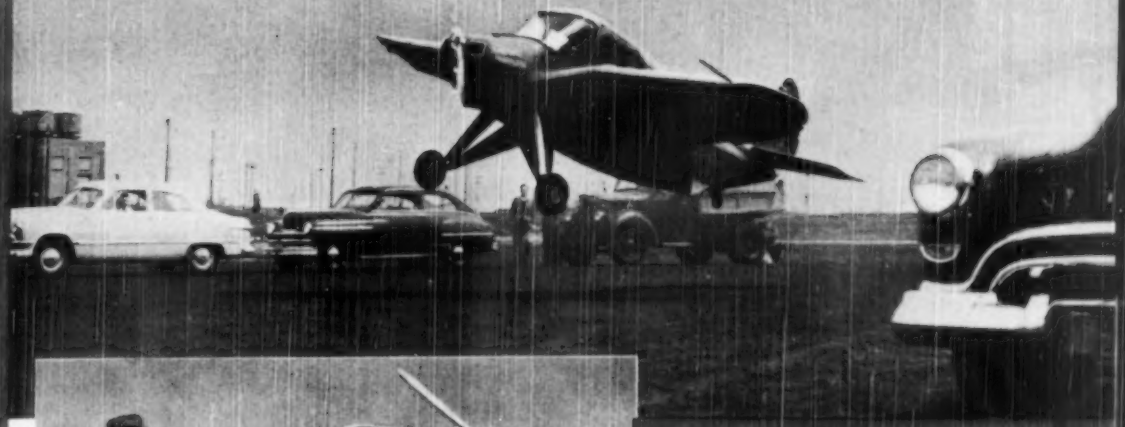
Then switch to Chart 1B. At the same fuel rate indicated by Chart 1A read the corresponding engine speed. Use of this engine speed will give the maximum range under a no-wind condition with the fuel available.

But you want to introduce the wind factor. On Chart 1A draw lines similar to Line B at intervals of 15 m.p.h. (indicating headwind) along the bottom of the chart, each one touching the curve at a point of tangency.

The airspeed and fuel rate indicated at each of these points will give the maximum range for the particular headwind involved. To obtain proper engine speed in each case, read the fuel rate at the point of tangency. Then obtain the corresponding engine speed from Chart 1B.

Now you can work out a placard for your instrument panel. From the optimum engine (*Continued on page 52*)

THE PLANE THAT LANDS LIKE A *Parachute*



Lanier Paraplane has undergone modification in past 12 months.

A LITTLE OVER a year ago, FLYING ran an article on an amazing new lightplane development—the Lanier *Paraplane*. The bat-like little plane could take-off and land in a little over 100 feet, could glide as slow as 30 m.p.h., and was stall and spin proof.

The original research model of the *Paraplane* is still flying, and has undergone extensive testing and modification in the past year. Edward M. Lanier, president of Lanier Aircraft Corporation, says the plane "could easily pass certification tests now, as far as flight is concerned."

This particular aircraft will not, however, be certificated. Intended as a pure research model, the present *Paraplane* is built of a complicated welded structure to make changes easier. This structure would be too expensive for volume production purposes.

Sometime before January 1, 1951, Lanier does intend to start building one of the planes he will try to certificate. A two-place, low-wing, dural version of the *Paraplane* is in an advanced engineering stage. The (*Continued on page* 59)

Lanier and Riley inspect empennage. During past 12 months, rudder and stabilizer have been re-built one-third lighter so the c.g. could be moved forward.

The Low and Slow Air Force

Army liaison pilots prepare to support troops in Korea.

By ED HOADLEY

Operator of Veterans Airport at Bloomington, Ind., Ed Hoadley holds CAA instructor and commercial ratings, has logged over 2,500 hours. In World War II, he served in the AAF. Today, he holds the oldest active CAP card in Indiana. Hoadley attended University of Indiana, University of Southern California and Harvard.

Standby of post-war Army aviators is Aeronca L-16, powered by 90-h.p. Continental engine. Wingspan is 35 ft. 2 in. and length 21 ft. 6 in.

SHORTLY after D-day, during the invasion of France, a lonely Piper *Cub* putted up and down an assigned sector at 1,500 feet. The pilot, Lieut. A. T. Pumphrey, Field Artillery, was lonesome and scared as he radioed periodic "all clear" signals to the long tank column behind him.

Just then Air Warning alerted him. Fifteen enemy planes were in the area. Seconds later, three flights of Messerschmitts jumped him. Flipping the *Cub* on its back in an almost half-snap, Pumphrey dived for the tree-tops. The left wing had a 20-mm. shell "calling card" in it, and vibration threatened the entire plane.

As he levelled off at half-tree-top height and scooted up a wooded ravine, two 109's returned to finish him off. This second pass racked the *Cub*. It was a toss-up whether Pumphrey or Piper was shaking the most. However, keeping the tax-payer in mind, the lieutenant skillfully landed the *Cub* in a short field, jumped out the moment the wheels touched, and high-tailed it for the biggest tree in the ravine.

Army flyers Lieut. A. T. Pumphrey (right) and Capt. Harold E. Woolf are briefed before liaison mission by Maj. Oliver J. Helmuth (left).

Aeronca's short take-off (above) and fast climb are excellent, says author. But the plane's slow flight characteristics are "uncertain."

SOMEWHERE IN SOUTH KOREA

Slow-flying liaison planes like this camouflaged Stinson L-5 are doing yeoman work in South Korea. Attached to forward air bases, they direct jet fighters—flying at blinding speeds—to North Korean ground targets. This plane was used in stiff fighting over Korean battlefront along the Kum River. Planes work with artillery outfits as well as with the Air Force.

Meanwhile the *Luftwaffe* returned again. As Pumphrey streaked for the woods, twin rows of popping dust followed him on his course.

The fourth pass of the 109's caught the Cub wing and it burst into flames. A big tree had a very small man safely behind it—safe, save for shoulder and leg wounds.

This was just another day in the life of a liaison pilot. Through Africa, Italy, France, Germany and the Pacific, the liaison pilot laid stepping stones to victory. Who is this lightplane combat jockey? How was he picked over twenty million other American youths? What is he doing today?

* * *

Let's go back 10 years. While a young chap named A. T. (the "A.T." stands for nothing) Pumphrey was an obscure groceryman in Pampa, Tex., an artilleryman named W. W. Ford decided the lightplane had a very definite place in the defense of the United States. Ford was so convinced that he wrote an article for the "Field Artillery Journal." That article interested a major general in the Field Artillery—who enlisted private planes and civilian pilots into the big 1941 Louisiana maneuvers.

Shortly afterwards, a liaison school was opened at Fort Sill, Okla., under Col. W. W. Ford's supervision. The school soon became the "West Point" of the Piper pilot. Even Tony Piper of the Pipers of Lock Haven, Pa., was there with his captain's bars. This was purely and simply a pilot's school for artillerymen. Here they were taught to do in wartime the very things that the CAA jitters about in peacetime—low-flying, evasive tactics, contour flying (buzzing to you), one-wheel landings, barrier take-offs, artillery fire adjustment.

* * *

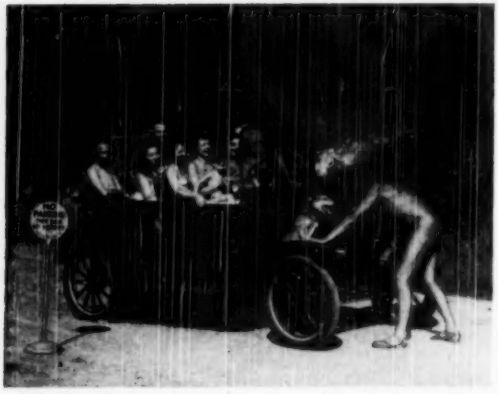
Meanwhile, A. T. Pumphrey had volunteered in 1940.

After a tour of duty with aviation cadets, Pumphrey was told by the Air Force that he couldn't fly, so he wound up in a Quartermaster Trucking Unit. He had been a member of a private flying club at Pampa. So when the unit's bulletin board called for 35 men for training at Fort Sill, he disobeyed that Army tenet, (*Continued on page 58*)

Navion L-17 is called "flying sedan" by the Army aviators. Comfortable and rugged, four-placer's control at slow speeds is excellent.

Warning road sign at entrance to Sunny Rest Lodge does not apply to pilots. They should not be surprised at the unorthodox line boys.

Pennsylvania's



Sunny Rest is a family lodge. Father, mother and children vacation together; here they have fun touring grounds in Model T.

For years pilots have kidded wistfully about being forced down in a nudist camp. Now they don't have to be forced down.

Nudists watch author make first plane landing on Sunny Rest strip. Airport was soon improved until now it has 2,000-foot strip.

Nudist Airpark...

By DONALD JOHNSON

JUST two miles north of Palmerton, Pa., there is a new airport which is probably unique in the world. It has excellent runways, clear approaches in all directions and a large clear air-marker. On the ground the visiting airman will find a cordial welcome, meals, lodging if desired, a wide variety of sports activities, a particularly inviting swimming pool and probably also the surprise of his life—for he will have landed right on the grounds of one of America's largest nudist parks.

In the summer of 1948 a pilot flying in the vicinity of the Lehighton Water Gap had the unhappy experience of hearing his engine cough and quit. He quickly spotted a level hilltop which looked ideal for a forced landing. Everything went fine until the pilot, flustered, flared out too high and dropped in hard. He climbed out to find his landing gear spread and his prop splintered. Just as he was getting his composure back, the pilot saw a tall athletic man coming towards him wearing nothing but a deep suntan and a pair of sandals. Then he knew that it had happened at last, someone *had* made a forced landing in a nudist camp and he was it.

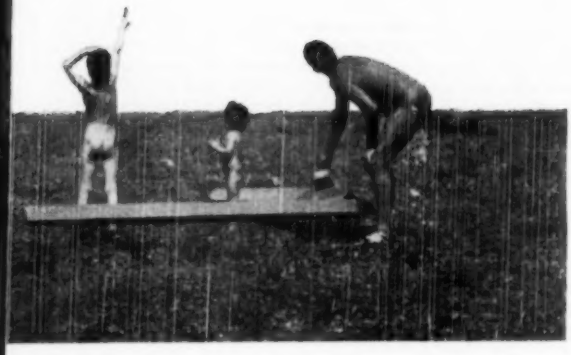
Within a few minutes the plane was surrounded with men, women and children all equally unclad and apparently concerned only in finding out if the pilot were safe and the ship something less than a total wreck. One of the nudists, who is an airline captain, checked over the engine and told the still startled pilot that the next time he wanted to practice spins he should put the carburetor heat on first.

By the time two days had passed and the ship was once more signed off as airworthy, the pilot had paid his dues as a member of the club and had already turned a lovely shade of blister pink. After he had taken off, the mechanic who had repaired the plane got the manager aside and said that he would like to join too. That did it. A long huddle took place during which all concerned debated the pros and cons of doing what had never been done before, opening an airport as part of a nudist park. After much discussion they decided to go ahead.

For several years I had known that Reed and Zelda Suplee ran a large nudist camp somewhere over in Pennsylvania. That, I figured, was their business; we were good friends and saw each other often despite the fact that I had never accepted their invitation to visit the camp grounds. When Reed told me that he planned to go ahead with the airport idea, I wished him luck and told him that if I could ever help him out in any way to let me know. That was my mistake. Right then and there I became chairman of the Sunny Rest Airport Development Committee and chief technical adviser. For a while, all I had to do was look at drawings and answer routine questions as to what is and is not necessary for the operation of a small private landing strip—which is all that was contemplated at that time.

Being human, I began to wonder what the proposed strip was going to be like. It occurred to me that there is many and many a landing strip, but never a strip as stripped as this one. Then I got an official notice in the mail that the field would be formally dedicated and opened to traffic on May 13, 1950, and that so and so would arrive at Sunny Rest for the first time and would make the first official landing. "So Reed has finally gotten his strip in," I mused happily. "Well, I hope he enjoys it. And as for the first landing—." I looked again. Yep, I had been elected.

That landing I will always remember. There have been times in the past when I have wondered exactly where I was, but when I saw three or (*Continued on page 60*)

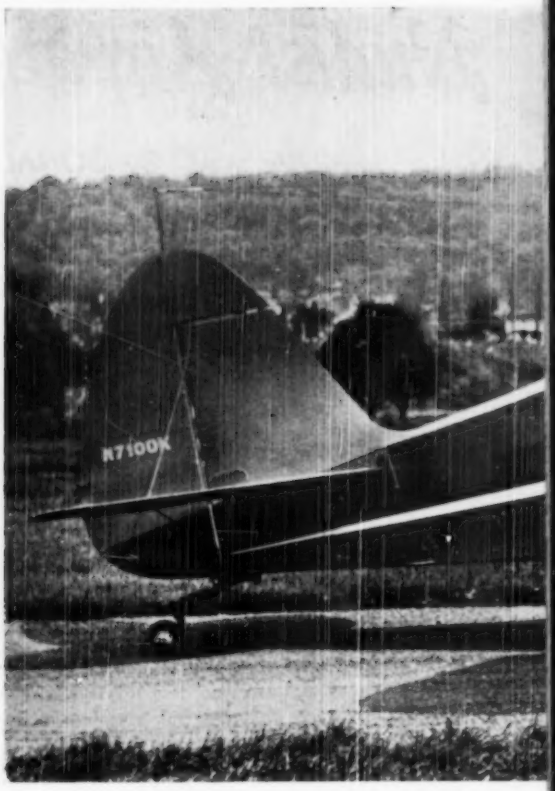


HOW TO FLY THERE

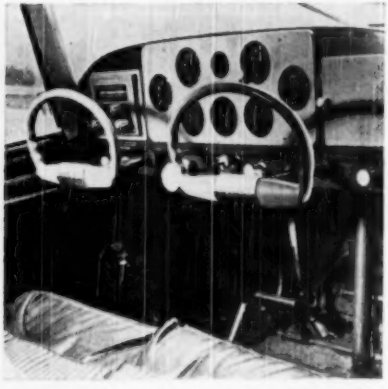
Sunny Rest Airport, el. 950 feet, is two miles due north of Palmerton, Pa. NW-SE 2,000 feet, no obstructions. E-W 1600 feet 2½ per cent downgrade to west, no obstructions. Air-marker on dining hall. No landing or tie-down fee. Meals, room, sports, approx. $6 per day. 80 octane. Open May-Sept. 15.

PIPER PA-20

PACER



Converted to cargo plane, rear seat is folded out of way. Note strut fairing which increases cruise about five m.p.h.



Trim panel has space for installing radio and additional flight instruments. Radio isn't standard equipment. Pacer's cabin is sound-proofed.

By BEN ROBIN

ALMOST TWO years ago Piper Aircraft Corporation introduced the four-place *Clipper* to the personal plane market. Along with each *Clipper* sold, a questionnaire was submitted to the owner asking for his criticism of the plane. The criticisms—both good and bad—were numerous and from the suggestions, Piper was able to compile, sift and then reconstruct a plane that is now called the *Pacer* or PA-20.

First Piper went to work on the interior of the plane. Some pilots had said that it was difficult to get in and out of the front seat in last year's *Clipper*. This was improved by removing the control sticks and replacing them with wheels. Also, to give more room, a fuselage gas tank located beneath the instrument panel was removed and a second wing tank was installed to take its place.

Others complained that the seats were hard and uncomfortable. Now rubberized hair and no-sag spring seats are used beneath the *Pacer's* new two-tone brown and grey upholstery. An arm rest for the pilot helps relieve strain. The right window has been redesigned to allow air intake on each side of the cabin.

In the original *Clipper* there was no soundproofing but the *Pacer* is quiet enough to allow radio loudspeaker operation at cruising throttle.

The final major change in the *Pacer's* interior is the improved design of the instrument panel. Originally, all instruments were grouped at the left directly in front of the pilot. There was no space provided for additional flight instruments or radio. Now it requires

Piper is building three models of its four-place PA-20 Pacer: the 115 (priced at $3,295), the 125 ($3,795) and the 135 ($4,265). Model numbers designate approximate cruising speeds. The Pacer has 20 per cent more tail surface than last year's Clipper. Elevators are balanced. The Pacer 125 and 135 have flaps as standard equipment.

no drilling of holes or re-grouping of instruments to add a primary flight group, and a handy glove compartment at the left side of the panel may be used for radio installation.

Customers' suggestions also resulted in several changes to the exterior of the PA-20. The stiff landing gear on last year's plane made soft, smooth landings difficult. The *Pacer* uses auto-type snubbers along with shock rings to make landings softer.

Someone didn't like the excessive stick loads—so this year's *Pacer* has 20 per cent more tail surface. The balanced elevators also lessen stick loads and increase stability.

Still other changes include aileron cables concealed inside the wings—giving a slight gain in cruising speed. Flat, streamlined tail brace wires instead of the round ones used previously increase cruising speed still more. Wing strut fairing is good for another few miles per hour. A single strut step adds further streamlining and makes front seat entrance and egress easier. The old step was shaped like a "U" and was mounted at an awkward angle.

All the changes outlined so far are found on all 1950 *Pacers*. Actually, there are three separate PA-20 models: the 115, 125, and 135. These model numbers designate approximate cruising speeds, and the price and features of each of the three *Pacer* versions differ considerably.

The 115 is a slicked-up version of the original *Clipper* and sells for $3,295. It is powered by a four-cylinder Lycoming engine developing 108-h.p. at 2,600 r.p.m.

The *Pacer* 125 and 135 models have flaps as standard equipment. Lycoming has built a bigger 290 cubic inch engine developing 125 h.p. at 2,600 r.p.m. for these deluxe model PA-20's. All three *Pacer* models have the crossover exhaust system which uses exhaust gases for increased take-off horsepower. The 125 sells for $3,795 and is equipped with a Sensenich wooden propeller. The 135 price ticket is $4,265 and the plane includes a Koppers *Aeromatic* prop as standard equipment. This propeller a manifold pressure gauge, and outside air temperature gauge are the only differences between the 125 and 135 models. Piper suggests a metal (*Continued on page* 45)

EDITOR'S NOTE

This series of articles is planned to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Type Certificate are flown. The authors evaluate each aircraft through the eyes of the average private pilot who flies an airplane for business or recreation.

FLYING's CHECK PILOT

★ UNCLE SAM'S ★ AVIATION LIBRARY

In no other nation is so much aviation information available to the public—at so low a cost. Government publications listed here are primarily for private pilots. In future issues, FLYING will carry listings of publications that are of special interest to operators, mechanics, engineers, and flying farmers.

DEPARTMENT OF COMMERCE (CAA)

(General)

CAA Journal. Monthly. 75 cents a year U. S. and Canada. $1.00 in other countries. (GPO) A must for all pilots, particularly instructors. Contains official Government developments in aviation, lists new books, and changes in CAR planned and effective. Complete record of CAA and CAB actions.

Flight Information Manual. $1.00 single copy. Issued twice a year. (GPO) Everything for the cross-country pilot from airport locations, calls, etc., to foreign and territorial entry and flight requirements, and Manual 60 of CAR.

Airman's Guide. 25 cents. Issued biweekly. (GPO) Has complete directory of airports; radio facility data; notices to airmen, including chart changes; and amendments to Flight Information Manual.

(NOTE: Both Airman's Guide and Flight Information Manual can be obtained on yearly subscription basis for $6.00 in U. S. and $8.00 in foreign countries. This includes 26 copies of Guide and two of Manual.)

Flying the Omnirange. June 1950.

Terrain Flying. 1948. 25 cents. (GPO) Excellent pocketbook. Tips on how to fly in various sections of the country.

Air Marking. Bulletin 12. August, 1945. 30 cents. (GPO) How-to-do-it.

CAA Statistical Handbook of Civil Aviation 1949. 50 cents. (GPO) Official facts and figures on civil aviation.

Industrial Flying. July 1948. 10 cents. (GPO) Good for those wondering what to do with their plane.

DEPARTMENT OF COMMERCE (CAA)

(Training)

Civil Pilot Training Manual. Bulletin 23. September 1941. 65 cents. (GPO) Complete pilot text. A must for commercial and flight instructor candidates.

Facts of Flight. 1947. 50 cents. (GPO) Non-technical, color illus. Primarily for student pilots.

Realm of Flight. 1946. 60 cents. (GPO) Basic meteorology for pilots. Color illus. Non-technical but complete enough for commercial pilot's exam.

Meteorology for Pilots. Bulletin 25. January 1943. $1.25 (GPO) More complete and advanced text.

Path of Flight. 1946. 40 cents. (GPO) Air navigation in simple terms. Complete enough for commercial pilot's exam.

Practical Air Navigation. Bulletin 24. 1945. $1.50. (GPO) More complete than above, not as simply written.

Aircraft Powerplant Handbook. CAA Tech Manual 107. January 1949. $1.25. (GPO) Supersedes old powerplant manual. Fundamental information.

Pilot's Airplane Manual. Bulletin 27. September 1940. 40 cents. (GPO) Construction and maintenance of aircraft, excluding engines.

Student Pilot Guide. January 1948. 10 cents. (GPO)

Commercial Pilot Examination Kit. January 1948. 30 cents. (GPO) Includes sample questions from commercial written exams.

Flight Instructor's Manual. Bulletin 5. September 1941. 35 cents. (GPO) To be supplemented by new manual combining FIM, CPT manual and new material.

Flight Instructor Oral Examination Guidebook. March 1949. 5 cents. (GPO)

Air Traffic Rules Guidebook. 1949. 10 cents. (GPO) Good for students and flight instructors.

ANC Procedures for the Control of Air Traffic. 40 cents. (GPO) Brings military-civilian air traffic procedures up through March 15, 1950.

CAA OFFICE OF AVIATION INFORMATION

(Safety Regulation Releases)

Aircraft Climb Performance and Corrections for Variations in Atmospheric Conditions. No. 66.

Effect of Weight Upon Rate of Climb. No. 150.

Effect of Atmospheric Conditions Upon Rate of Climb. No. 181.

Effect of Power Upon Climb. No. 196.

Effect of Temperature on Rate of Climb. No. 153.

Aircraft Cruising Range Characteristics. No. 165.

Prevention of Engine Idling Failure. No. 261.

Prevention of Idling Failure in Flight. No. 136.

Risk of Flying Without Proper Instrument Training. No. 18.

DEPARTMENT OF COMMERCE (CAB Publication Section)

The Human Equation in Aircraft Accidents. No. 50-16.

Carelessness—The Principal Factor in Ground Fire Accidents. No. 168-46. 5 cents. (GPO)

Service Pilots vs. Light Planes. No. 169-46. 5 cents. (GPO)

Air Recklessness. No. 170-46. 5 cents. (GPO)

That 500-Foot Regulation. No. 171-46. 5 cents. (GPO)

Seaplane Safety. No. 172-46. 5 cents. (GPO)

Low-Slow Flying—The Fatal Mistake. No. 173-46. 5 cents. (GPO)

Small-Field Traffic. No. 174-46. 5 cents. (GPO)

Don't Drink and Fly. No. 175-47. 5 cents. (GPO)

Strange-Field Landings. No. 176-47. 5 cents. (GPO)

Students—Don't Fly Passengers. No. 177-47. 5 cents. (GPO)

Why Have Prop Accidents? No. 178-47. 5 cents. (GPO)

Buzzing—Jail Bait. No. 179-47. 5 cents. (GPO)

Runways Shrink. No. 180-48. 5 cents. (GPO)

Cold Weather Safety. No. 181-48. 5 cents. (GPO)

If You Don't Know Weather Flying. No. 182-48. 5 cents. (GPO)

Buzzing Is Deadly. No. 183-49. 5 cents. (GPO)

Don't Ask For Trouble—File a Flight Plan. No. 184-49. 5 cents. (GPO)

Let's Look at Spin Crashes. No. 101-48. 5 cents. (GPO)

What Causes Collisions? No. 102-49. 5 cents. (GPO)

DEPARTMENT OF THE ARMY (Technical Manuals, all obtained through the Government Printing Office.)

Air Navigation. TM 1-205. November 1940. 40 cents.

Weather Manual for Pilots. TM 1-230. May 1940. 40 cents.

Elementary Weather for Air Crew Trainees. TM 1-231. February 1943. 10 cents.

Basic Weather for Pilot Trainees. TM 1-232. April 1942. 45 cents.

Arctic Manual. TM 1-240. January 1944. 25 cents.

HOW TO ORDER GOVERNMENT PUBLICATIONS

All publications in the accompanying listing are printed by the Government. Titles followed by letters "GPO" can be ordered only from the Government Printing Office. Send only checks, money orders or postal orders, payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Payment must accompany each order.

If the listing isn't followed by the letters "GPO" the publication is free, and may be ordered from the Government department under which it is listed—unless otherwise noted.

In ordering, give all information (including numbers) which accompanies the listing.

Parachutes and Aircraft Clothing. TM 1-440. June 1945. 15 cents.

Physiological Aspects of Flying. TM 1-705. September 1943. 15 cents.

Mathematics for Air Crew Trainees. TM-1-900. September 1943. 25 cents.

DEPARTMENT OF THE NAVY

American Air Almanac. $1.50 (GPO)

Aerology Series. Each 10 cents. (GPO). Number 3—Fog; Number 4—Air Masses and Fronts; Number 5—The Warm Front; Number 6—The Cold Front; Number 7—The Occluded Fronts; Number 9—The Equatorial Front.

Sense Pamphlets. All through GPO. Dunking Sense, 15 cents; Manners Sense, 10 cents; Oxygen Sense, 10 cents; Parachute Sense, 15 cents.

Aircraft Instruments. Training Publication, NavPers 10333. 1945. 40 cents. (GPO)

Aircraft Engines. Training Publication, NavPers 10334. 1945. 35 cents. (GPO).

Aircraft Fuel Systems. Training Publication, NavPers 10335. 1944. $1.00. (GPO)

Aircraft Propellers. Training Publication, NavPers 10336. 1944. 40 cents. (GPO)

Aerology, Volume I. Training Publication, NavPers 10361, 1944. 60 cents. (GPO)

Aerology, Volume II. Training Publication, NavPers 10362. 1945. 45 cents. (GPO)

FEDERAL COMMUNICATIONS COMMISSION

FCC Rules, Part 9. Rules and Regulations Governing Aviation Services. 10 cents. (GPO)

U. S. WEATHER BUREAU

Educational Series. Eight publications at 20 cents per set. (GPO) Includes cloud forms (chart); explanation of weather code figures and symbols, weather forecasting; weather reporting and forecasting; the weather bureau; fighting cold weather with the fruit and vegetable man; sample copy of the Washington daily weather map; and a price list of bureau publications.

Classified Flying Weather for the U. S. $1.00 per copy. (GPO)

Cloud Forms, with Definitions. 20 illus. 5 cents. (GPO)

Cloud Forms. Descriptive pamphlet with 32 illus. (WB Number 956) 10 cents. (GPO)

Normal Flying Weather for the U. S. $1.00. (GPO)

Forecasting from Synoptic Weather Charts. (WB miscellaneous publication Number 236) 10 cents. (GPO)

Schedule of Weather Broadcasts. 5 cents. (GPO)

Daily Weather Map (1901—WB, 19 by 24 inches). Issued at Washington showing weather data for U. S. and forecasts for D. C., Maryland, Virginia, East New York and East Pennsylvania, New Jersey, Delaware, West Virginia, West New York and West Pennsylvania. Seven days a week. 30 cents monthly; $3.60 a year in the United States. $9.10 a year in foreign countries. (GPO)

Hurricane Notes. WB training paper Number 1.

Four Place Training

Novel Ohio experiment shows how to use planes as well as fly them.

Everyone checks weather, plots course. Here, students and instructor study weather reports and talk with U. S. weatherman.

Instructor (left) confers with three students prior to cross-country flight. They learn plane utility as well as how to fly.

Before take-off, instructor briefs students. They will alternate at controls, will study navigation while on cross-country.

By GEORGE R. REISS

IT'S FUN to learn to fly under C. E. A. Brown's new "four-place" program, now being tested at more than 50 U. S. airports. Instead of just buzzing around the airport, flight students take off on cross-country jaunts that demonstrate lightplane utility. While they travel, they also learn how to operate an aircraft.

For example, if you signed up for the course at one of the Ohio towns where it's offered, here's a sample of what your training might include:

You'd probably fly to Kelley's Island, a picturesque dot of land in Lake Erie, where you'd take time out for lunch. Maybe you'd spend an hour or so fishing.

On another flight, you might land at Cleveland's downtown strip—and take a bus into the business section. You'd make an overnight hop to Michigan, another to Indiana and perhaps Pennsylvania, visiting airports that have recreational facilities and overnight cabins.

At least one cross-country would be flown over mountainous West Virginia, giving you practice in mountain flying and after-dark landings. You'd also drop in at some big Ohio air terminals, and would land on several Flying Farmers' grass strips.

And over 80 per cent of the time you'd be flying with several of your cronies, just as you do in learning to play golf, playing poker or going fishing!

Under Ohio's new group program, three students are trained simultaneously in four-place aircraft. And each student gets credit toward a pilot's certificate for his back-seat time.

The program is being given a whirl by the CAB, the CAA and more than 50 approved flight training schools scattered over the U. S. If it works out, it will be made a permanent training method, incorporated into the CAR.

C. E. A. Brown, "father" of the program, is Ohio's director of aviation and chairman of the educational committee for the National Association of State Aviation Officials. His idea is that conventional flight training has overlooked "the fellow who would really get utility from his plane—the middle-aged conservative business or professional man with a good income."

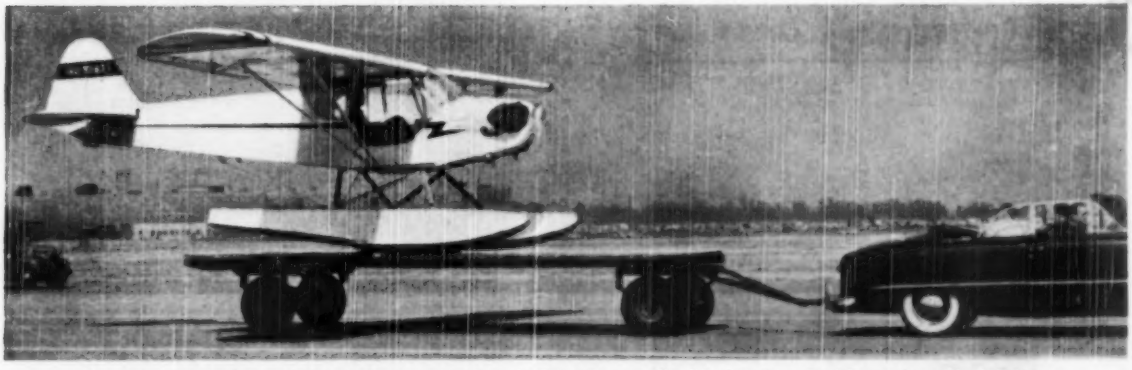
Says Brown: "He's the fellow with means to buy and maintain an airplane, and he's the fellow who has a use for it, with cross-country business or pleasure trips. But conventional flight training frightens him, bores him and wastes his time."

"The old type of training (*Continued on page* 60)

Helicopter "circus," an RAF act at Britain's Farnborough airshow, featured three Hoverfly II 'copters dressed as elephants—with trunks and moveable ears.

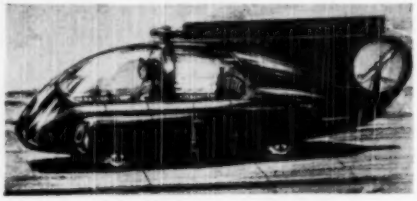
HAVE YOU SEEN?

Raider's JATO enables new light assault transport to clear 50-foot obstacle in under 1,000 feet. Built by Northrop, the C-125 uses six JATO units. Gross weight is 40,000 pounds. Far larger than World War II medium transports, the three-engined craft is designed to lug heavy loads.



Just before take-off, Piper Cub on trailer is moving 65 m.p.h. The craft was modified for Van Camp Food Co., to be used with fishing boats to scout out schools of tuna off California coast. To save towing 15 miles, pilot made successful take-off from trailer at airport.

Flying "trailer-truck," the Fairchild XC-120—called the Pack Plane—is able to detach its fuselage and leave it on the ground.

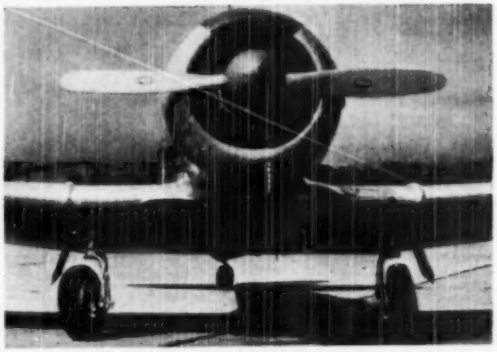


GERMAN FLYING AUTO

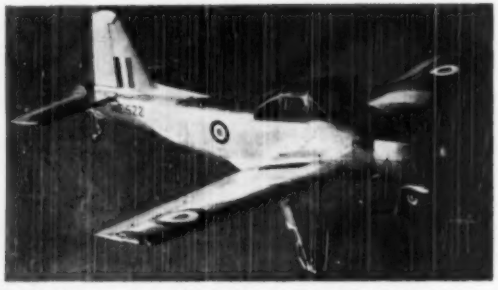
ROADABLE helicopter proposed in Germany would be able to take off and to land vertically, to hover, and to fly about 136 m.p.h. Top ground speed is 56 m.p.h. Using novel "aggregate gear," pilot could apply or cut off various cylinders while machine is operating on ground, thus solving big engine problem of roadables. Fuel consumption is about 18 miles to the gallon on the road. Roadable was designed by Gunter C. Kaempf, is designated Ka-2. It cannot be produced in Germany because of Allied controls.

HAVE YOU SEEN?

Continued

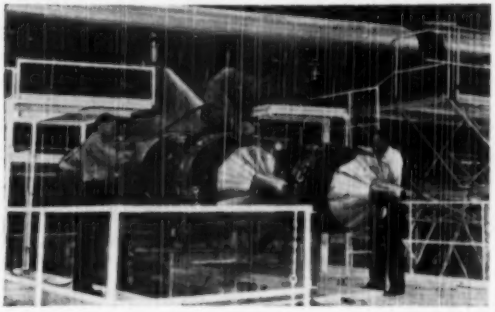


First cross-wind wheels on military aircraft are installed on AT-6 for Air Force tests. Wheels are built by Goodyear.



Two British trainers, the Percival P-56 (left) and Handley Page HPR-2 (right), are designed as replacements for Percival Prentice. Both are powered by Armstrong Siddeley Cheetah 17 radial engines of 420 h.p. The P-56 and HPR-2 have side-by-side seats in cockpit.

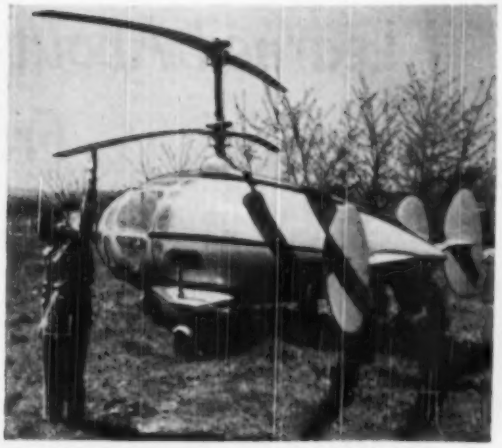
Finnish amphibian, Eklund TE-1, is single-seater with folding wings. All-wood craft cruises 75 m.p.h. on a 28-h.p. powerplant.



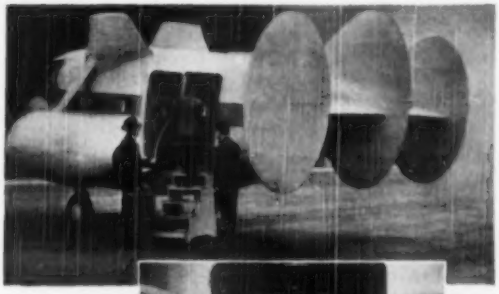
Jet "pod" is installed on giant B-36 bomber. Late model B-36's have four J-47 jet engines plus six 3,500-h.p. piston engines.

British-built version of Sikorsky S-51 is known as Westland-Sikorsky Dragonfly. Engine is a 500-h.p. Alvis Leonides radial.

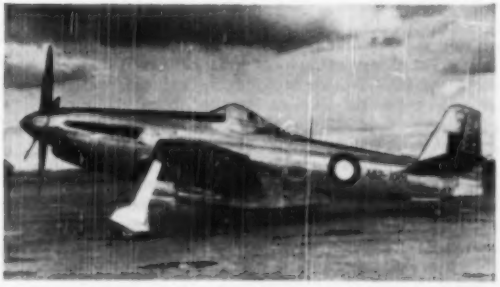
DeHavilland Heron, British light transport, makes first flight. It is 14-17 seater, cruises 160-m.p.h. on four 250 h.p. engines.



Midget helicopter (BGM-2) built in Italy, weighs about 1,100 pounds. Range is 400 miles on a four-cylinder, 80-h.p. engine.

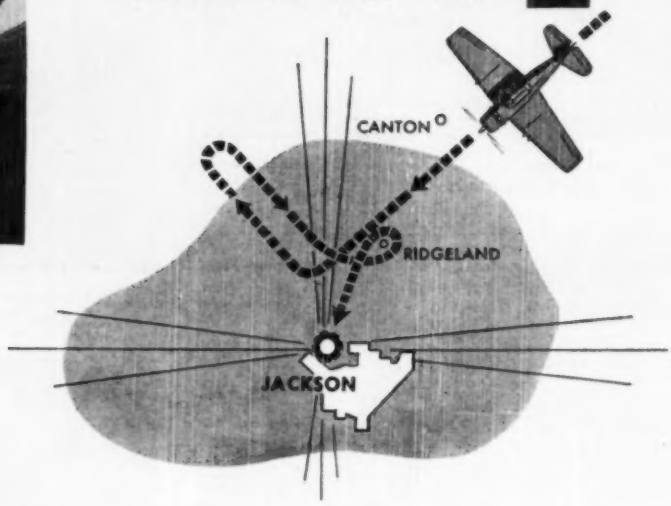


Kellett transport helicopter will carry 12-16 passengers, two crewmen. Military version is known as H-10. Photos are of mockup.



Australian-designed fighter (CA-15) resembles F-51. Its top speed on 2,035-h.p. engine is 442 m.p.h., range is 2,540 miles.

I Learned About Flying From That! NO. 131



By ROBERT F. MECKOLL

An ex-Navy pilot, author was ferrying F4F across the country when he made his big radio blunder at Jackson, Miss.

The terrain was familiar, so he didn't check the radio range.

I WAS half-an-hour overdue at Jackson, Miss., after a long hop from Spartansburg, N. C. Early twilight lowered the already poor visibility. I was lost and running out of gas. I tried to pick a clear landing spot in the mist-shrouded forest below. There were none.

After 900 hours in the air I was still careless. The more than 10,000 miles and almost 100 hours of cross-country time I had flown in the preceding two months increased that carelessness. I believed I knew the route well—I'd flown it a half a dozen times in the past few weeks. How wrong I was!

My last hour's supply of fuel was going fast. The gas gauge crept nearer and nearer empty—with about 40 minutes' flying left. Something about lost plane procedure and bisector headings kept coming into my mind.

Jackson radio was tuned in on my range receiver. I turned the volume up and a clear *di-dah* came into my headset. I was almost on the "A" bisector heading according to my charts. I crossed my fingers and hoped I would soon find the station.

Instead of flying the airways on the 350-mile hop, I flew direct. At least I thought I did. I used general audio-checks on the radio ranges instead of the visual checks I should have made. But neither my audio nor my visual checks were precise.

My second big mistake came in crossing what I supposed to be the east leg of the Jackson range. The trees and rivers and the general look of the terrain were familiar. Blissfully I turned west, presuming the town was just ahead. *I did not check the leg.* Soon a twilight "N," *dah-dit,* began coming in. A little south of the east leg, I figured. I banked the plane over a bit to the right. The "N" was more distinct. Steadily my corrections became larger and larger. Yet with each correction the *dah-dit* became clearer in my headset. Still I didn't feel too uneasy about it.

When I reached 30° off the inbound heading, I began to wonder. I knew the general direction of the lowering sun was westerly. My compass wasn't too much in error. It read correctly when I picked up the plane at Norfolk, anyway. Suddenly my mouth felt strangely dry. A light sweat broke out on my forehead. I checked the range layout on my sectional chart. My heading was more than 60° to the right of the inbound course!

I called the radio range and told them I was lost in an unknown "N" quadrant.

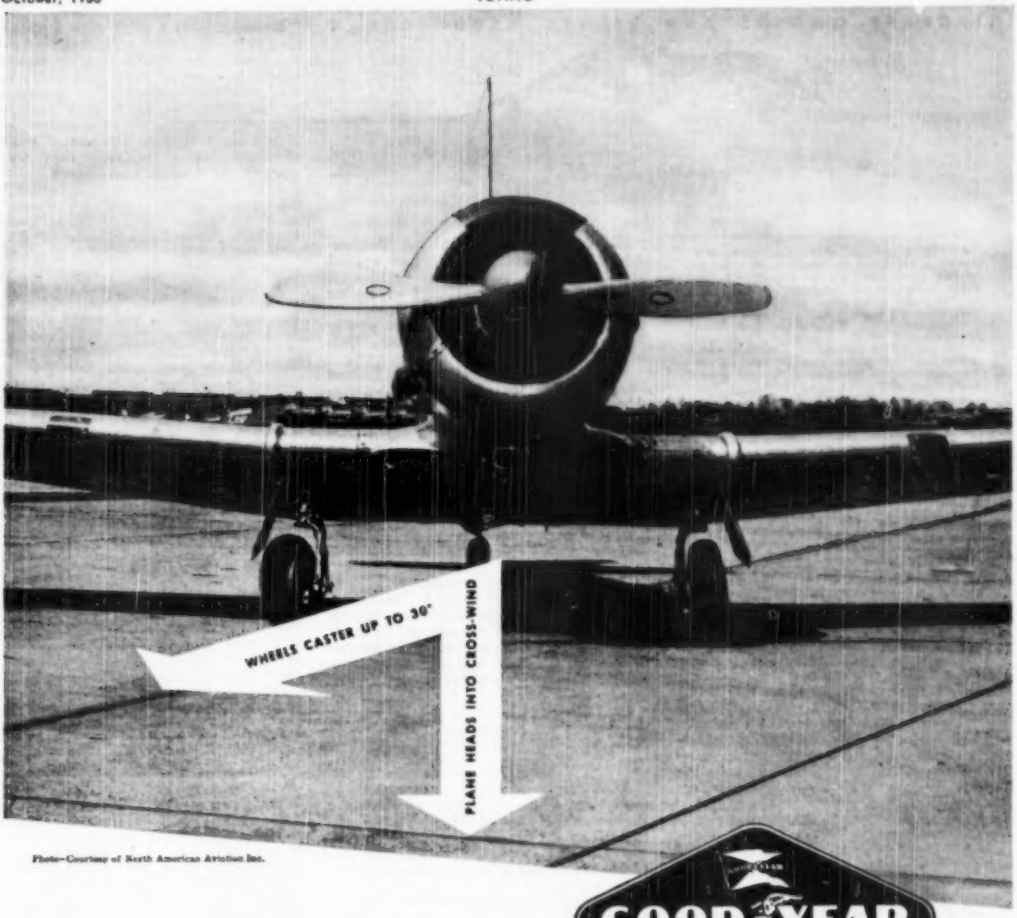
"Roger," they acknowledged clearly, "continue your orientation. Report when you have determined a fix."

It was my ball again, and I was still lost. At last I remembered to check for a build or a fade on the range signal. I tuned the receiver down till only a faint signal came through. Slowly it became less and less audible. Then it was gone. It was a sure fade. My heading was taking me away from the station. Wasting no time I kicked rudder and laid the plane over in a 180° turn.

Then an eerie thought struck me. The gas would last only half an hour more at best! I turned up the radio receiver again. The twilight signal soon came through. It became a steady "on course."

I turned to what I thought was the beam heading. Thinking I had joined the west leg, I headed east. Again I failed to check. Soon I saw a town ahead that I felt must be Jackson. The map showed the east-west leg crossing directly over it. However, the clear on-course buzz changed abruptly to a twilight "A" signal!

The field must be almost dead ahead, I thought. The *di-dah* of an "A" definitely replaced the beam signal, though. I couldn't see any field, (*Continued on page* 42)



Photo—Courtesy of North American Aviation Inc.

GOODYEAR AVIATION PRODUCTS

Prescription for T-6 CROSS-WIND landing

Now Goodyear has designed Cross-Wind Landing Wheels for T-6 "Texan" Trainers. This is the first design for military aircraft specifically, and is distinguished by a hydraulic locking device that lets the gear be used in conventional manner when desired. With the lock off, the castered wheels let the plane land on a single strip in *any* wind direction—even with the wind at right angles to the runway. Already in successful use on many civilian aircraft, Goodyear Cross-Wind Landing Wheels point the way to one-strip airfields. New developments like this are one of the many reasons why more planes land on Goodyear equipment than on any other kind. For full information about Goodyear Aviation Products, write:

Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is: "To make flying more useful, less expensive, safer and more fun."

Headquarters are: 15th and New York Aves., Washington 5, D. C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING MAGAZINE.

FEE PROTESTED

AOPA has recently protested to CAA Administrator D. W. Rentzel (AOPA 27323) the discriminatory fees against private pilots landing at Moisant International Airport in New Orleans. In a letter to Rentzel AOPA stated:

". . . Both the U. S. Weather Bureau and the Customs and Immigration services maintain their aviation facilities on Moisant Airport. Any pilot wanting to land at that field to use those facilities is forced to pay stiff fees not only for landing, but for the length of time he must park in order to use the facilities. This is called a "dockage" fee. Another member reports that, despite a $3 a day charge for dockage, it was up to him (the member) to provide his own tie-down ropes—and tie the plane down himself. Contrast this with the situation at Washington National: no landing fee, $1 a day tie-down with ropes, and excellent service provided.

"The implication of this exclusiveness on the part of the Moisant management is that the field is so busy as to require drastic segregation. The facts do not bear that out. Moisant airport is larger than Washington National, yet the Washington airport handles nearly four times as much traffic. Chicago's Midway airport handles over five times as much traffic as Moisant, yet has no such restrictions or discriminatory fees against private flyers.

"Just from the standpoint of airline operations alone, Moisant is far from congested. It handles fewer airline operations than Baltimore, Birmingham, Buffalo or Portland, etc."

AOPA is asking for removal of these discriminatory fees under the non-discrimination clauses of the Federal Airport Act. A similar problem concerning the use of Weather, Customs and Immigration facilities occurred at Miami International Airport, and once AOPA explained the situation to officials at that field, they voluntarily took steps to correct the matter. Private planes can now land and park free, in order to use Federal facilities for a reasonable period.

NOVEL RESTAURANT

David L. Remley (AOPA 72070) recently opened a new restaurant for pilots at the Sanford Airport in Sanford, Florida. The restaurant which is located in the main hangar will primarily function to serve private pilots flying into the area.

The aviation theme is carried out in the restaurant decorations. (See photo below.)

MAPS FOR SAFETY

AOPA has grown in two years to one of the largest single distributor of charts for the Coast and Geodetic Survey in Washington, D. C. Since July, 1949, the Aircraft Owners and Pilots Association has planned and carried out a system of distributing the newest and best air maps to its 70,000 registered members. And by a unique map subscription service, AOPA has sent out a total of nearly 200,000 sectionals and world air charts in that time.

Knowing that a pilot with last year's map is no safer than a night-driver without headlights, AOPA has stressed the safety measure of equipping pilots with the latest charts. Few pilots realize that air maps are revised twice a year, and they may be using obsolete sectionals or WACs—thus running the risk of not anticipating an obstruction that wasn't marked on their obsolete chart.

AOPA sends out, on subscription, all the recent and subsequent revisions of maps for areas that members specify. Members can either subscribe (at $1 per subscription) for all revisions of specified maps, or they can order maps individually at the regular Coast and Geodetic list price. At the present time, AOPA handles only sectionals and world air charts on a subscription basis. But planning charts, route charts, locals, instrument flight charts (and bound booklets containing these) can be ordered individually. There are 87 sectionals and 43 WACs available, either way.

AOPA members find it safer and cheaper to subscribe through this simple, speedy service. Charts are hard to find if a pilot attempts to buy them enroute. And, as one of our own officials found recently, *over 50 per cent* of the charts available around the country are obsolete!

If an AOPA member is planning a cross-country trip, he needs only to write in to national headquarters for full flight-chart information. Say, for instance, his flight is between New York and Chicago. The pilot gives his estimated place of origin and his destination (airport in New York to airport in Chicago), requests a routing and the necessary charts enroute. And, as quickly as the revisions are printed at the Coast and Geodetic Survey, AOPA sends the pilot-member the most recent charts covering his route.

AOPA also keeps an up-to-date listing of resort airports in the United States. If the pilot feels like stopping off enroute for a rest or for recreation, he can refer to the AOPA Pilot Service Bulletin on Resort Airports. He'll find lists of hotels, historic spots, tourist sites, and playgrounds of the United States. The AOPA pilot knows exactly where to land for fun or relaxation.

AOPA ATTORNEYS

AOPA national headquarters urges all AOPA members who are also attorneys to get in touch with us. If you are a pilot lawyer and would like to work on AOPA legal projects in your area, send us your name.

AOPA hopes to expand its present list of attorneys so that aviation-minded lawyers will be available in all parts of the country to help other AOPA members on aviation legal problems.

From time to time, AOPA will send aviation legal information of special interest to those on the list.

FLIGHT GUIDES

Four more AOPA foreign flight guides are scheduled for printing in the near future. The new bulletins cover Ecuador, Peru, Bolivia, and Chile.

Foreign flight guides are part of a series AOPA has planned to bring its members airport, customs and other information on Central and South American countries. Other guides in the series already available are Mexico, Guatemala, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Cuba, West Indies, Venezuela.

All flight guides are free to AOPA members on request.

New airport restaurant has just been opened by David L. Remley (AOPA 72070), above, in the main hangar at Sanford Airport, Sanford, Fla. All private pilots are welcome.

Another Major Air Line Testifies to CHAMPION Dependability!

PHILIPPINE AIR LINES

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Exclusively
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Philippine Air Lines, whose routes span two-thirds of the earth, is another major international air carrier to choose dependable Champion Spark Plugs. In the words of Mr. Edward T. Bolton, Vice-President-Director of Philippine Air Lines:

"Philippine Air Lines was one of the first international air carriers to use Champion Spark Plugs on overseas schedules. This early confidence was upheld by outstanding performance and, as a result, we have installed Champion R37S-1 Spark Plugs in all four-engine planes. Champions are also used extensively in our domestic equipment. They have played an important role in assuring the dependability and efficiency of P.A.L. planes on scheduled flights over almost 25,000 miles of international air routes."

EDWARD T. BOLTON
Vice President-Director

More Air Lines Fly with CHAMPIONS than Any Other Make

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If you want the most modern and efficient flight instruction—whether you are a veteran or civilian pilot —write to us for our free booklet outlining the courses we have to offer.
VETERANS— Your certificate of eligibility from the Veterans Administration is all you need to enroll at government expense for any of our courses under the G.I. Bill of Rights!
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NAME
STREET
CITY STATE

I Learned About . . .

(*Continued from page 38*)

either. Perplexed, I called the tower again.

"Jackson tower, this is 673 over unidentified town. Do you have me in sight?" I asked.

"Negative 673," they returned. "Could you describe any landmarks?"

I skimmed along the house tops. A lumber mill, a main street, railroad tracks and a school yard made up the small town. However, I could see no clues of its name. Then I spotted something that might help.

"Jackson tower, this is 673. There's a lumber yard with a water tower near it. The name of Woodford is painted on the tower."

The tower rogered my transmission, adding, "Will check. Wait. Out."

I couldn't wait long in the air. I tried a re-orientation on the range while the tower checked on my information. I turned to the "A" bisector heading. The fuel gauge showed me this was my last try. I was at a scant 700 feet, afraid to climb for fear of wasting gas. If I didn't find the field this time, I'd make that crash landing soon.

I pulled the canopy open. A rush of of air brought in the smell of the trees. None of the tiny clearings looked big enough to hit without killing myself if the engine quit. And it would quit at any minute I knew. I decided to wait till the last moment, though. I would pick as clear a spot as possible and hope. I leaned forward against my shoulder harness giving the straps an extra tug. They were okay.

"673 this is Jackson Radio." The range station still tried to help. "An officer at Jackson field knows this area fairly well."

I wanted to cut them off and concentrate on as good a landing as possible.

But they went on: "He says the Woodford lumber mill is just northeast of here. I'll let him talk to you."

For a split second I had hope. But only about 10 minutes' fuel remained.

"Steer 220," the officer told me. "That lumber mill is just about 20 miles from here."

Maybe there was a chance. The bisector heading I was on for the past few minutes was 215°. The town should be just ahead. I scanned the forest eagerly. Through the slight ground fog I could see only the trees and a lone farmhouse. If only I had five more minutes gas. Suddenly I saw the range station just ahead. A half mile further should be the field. A few minutes more, and I'd make it. I prayed the engine wouldn't quit in this last minute.

I was almost over the red and white radio towers. The engine was still going. I saw the runways. The engine still ran smoothly. The landing strips were beneath me.

What a relief! I lowered my wheels for landing and started my glide.

"Seven-six-three for straight-in approach," I requested. "Am very low on fuel."

"Cleared for runway two-nine," they responded.

I wondered if they were as relieved as I was. The runway looked mighty good. I moved the flap lever to "down" and eased the throttle back. Lining up with runway twenty-nine, I called the tower again.

"Wheels down and locked. On final" I reported.

Then at the last minute my luck almost failed me. I was fast and high over the middle of the runway. There wasn't enough gas to go around again. Quickly I dipped the left wing and held opposite rudder. She slipped and plunked down. The left wing dropped violently. I immediately hit the left brake. She swerved out of the ground loop. But to slow the plane in the short distance left I had to stay on the brakes.

Suddenly I saw I couldn't make it. I turned the plane toward a small taxi strip off the end of the runway. The tires smoked. The plane careened onto the taxiway. It leaned precariously. For a moment it seemed to balance on one wheel. Finally it settled back. I was down and safe. I taxied the plane to the parking area.

It was certainly good to be able to cut the engine and get out on good solid ground again and to be able to resolve never to cross another beam without checking it. I could have ruined several thousand dollars worth of airplane and, what is more important to me, a few cents worth of pilot. END

FLAT SPINS

• THE HARD WAY

Actor Michael O'Shea accompanied his wife, Virginia Mayo, to England recently for the shooting of a new film. O'Shea thought he'd please Virginia by sending to America for a box of her favorite chocolates. The box arrived in due time, via expensive air express. Stamped in bold letters on the box: "MADE IN ENGLAND."

Didja know? Four times as many man-hours are required to build today's military planes as were needed to build comparable World War II types.

• WOMEN AND CHILDREN DEPT.

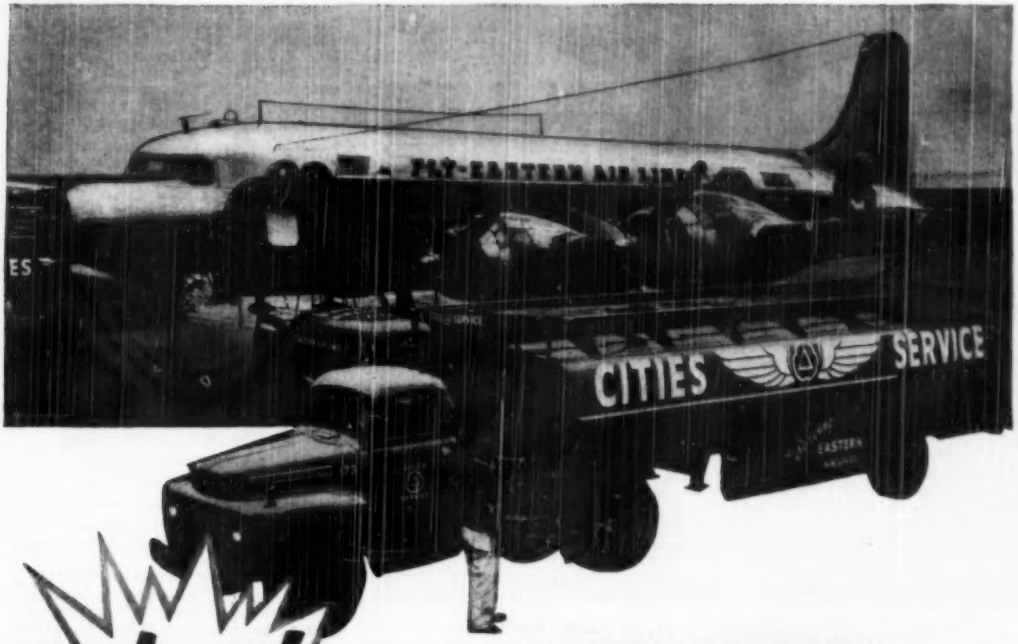
In 1935, only one in every seven passengers was a woman, says United Airlines. Today, one in three is a woman. In 1935, child passengers were a rarity. Today, one in every 13 passengers is a child 12 years of age or younger.

Pilots flying near the Lynchburg, Va., airport were dumbfounded when the radio crackled, "This is Stuttgart. Come in." The red-faced CAA communicator, Bill Slaughter, is fresh from a tour of duty in Germany.

• FLIGHTY NURSE

An 80-year-old woman with a weak heart felt much better about taking an airline trip to Cape Town, South Africa, when she learned one of the passengers was a young nurse. So what happened? The nurse became ill and the 80-year-old lady took care of *her*.

—Harold Helfer



NEW!

...ULTRA-MODERN AVIATION FUELING

Cities Service joins with Eastern Air Lines to inaugurate another great advance

The *Flat-Tops* are on duty now—making notable service records. With these remarkable new tank trucks, Cities Service is fueling Eastern Air Lines planes at LaGuardia, Newark, and Boston's Logan Airport. Never before has there been any approach to the safe, speedy, convenient fueling now made possible by Cities Service *Flat-Tops.*

You'll be interested in major *Flat-Top* features listed here. Each one adds evidence that Cities Service is in the forefront of aviation progress. That's why fields offering Cities Service products are winning preference today, among those eager for topnotch quality and service.

A FEW FLAT-TOP FEATURES

NO REELS . . . All hose lies flat—out of sight—on wide, flat metal grating above tank.

UTMOST SAFETY . . . Remote hydraulic drive from tractor engine, to slave pump, to high-speed fuel pump, keeps prime power far away from fuel outlets.

HINGED LADDER . . . Rises from flat position on grating; elevates and rotates as required; locks in place, with hose lifted on guide rails. No more auxiliary ladders to cause injury or damage.

SINGLE VALVE TO DE-FUEL . . . This is just one of many features for new simplicity and surety . . . for definite savings of time and labor with this extremely efficient tank truck equipment.

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Cities Service Trojan Aero Greases
and Aviation Specialty Products

CITIES SERVICE

AVIATION PRODUCTS

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CIVIL AIR PATROL

WING TALK

Critique of SARCAP

COL. PHILLIP F. NEUWEILER, Commander of the Pennsylvania Wing, first of the CAP wings to participate in Operation SARCAP—joint CAP-Air Rescue training maneuvers—has made several recommendations for improving CAP search and rescue operations, based on the Wing's experience during the statewide training exercise.

- Communications would be improved by making available to CAP search planes an air-to-radio frequency for search missions so that messages would not have to be relayed through CAA.
- A common CAP-ARS daylight frequency should be assigned for use in search operations.
- Ten-minute smoke flares should be provided since those of shorter duration burn out before heavier aircraft carrying para-rescue teams have time to line up the target and make their run.
- An SOP for CAP ground rescue operations should be written. (The Pennsylvania Wing is writing one now, says Colonel Neuweiler.)
- One training search and rescue problem a year is not sufficient and at least two should be held, one in the summer when wooded areas are in full foliage, and the other during the winter.
- Search crews should receive more training in map reading so they can properly identify the position of downed aircraft.

More than 1,000 CAP personnel participated in the Pennsylvania Wing operation. The entire Wing area of more than 45,000 square miles was successfully searched in less than six hours as pilots logged more than 600 flying hours.

L-5's to Korea

AT LEAST a dozen of Civil Air Patrol's L-5 aircraft are now doing their part in Korea. USAF liaison pilots flew the planes to the West Coast during the early weeks of the conflict and from there they were shipped to the Far East for duty with the Army ground forces.

Utah Wins Drill Championship

WORD was received as FLYING went to press that the Utah Wing had won CAP's National Drill Championship and the honor of representing the United States in the international competition with Canada. The Utes defeated New Jersey, twice national champions, Michigan, Hawaii and Puerto Rico in the national finals at Hill Air Force Base, Ogden, Utah.

Appoint National Chaplain

A SURVIVOR of the infamous Bataan Death March and two subsequent sinkings of prisoner-of-war ships, Air Chaplain (Lieut. Col.) Robert P. Taylor has received the first regular appointment as National Chaplain of the CAP. Colonel Taylor's initial task is to arrange for the appointment of chaplains at each wing.

Alert Radio Net

A SPECIAL project to provide for emergency alerting of the far-flung Civil Air Patrol radio network has been ordered by CAP headquarters. Wing commanders and communications officers have been directed to contact police and fire department officials in their localities and request that a radio receiver be installed and monitored on the special CAP frequency during hours when the wing stations are not manned. This would provide for a continuous listening watch and enable national headquarters in Washington, D. C., to summon all wing stations into the network at any time with a minimum of delay.

In addition to the 52 500-watt wing stations, CAP's communications' net comprises more than 6,500 smaller stations scattered throughout the country. Activities are directed through eight regional control stations located at Meriden, Conn.; Kearney, N. J.; Charlotte, N. C.; Detroit, Mich.; Minneapolis, Minn.; Wichita, Kans.; Spokane, Wash.; and Salt Lake City, Utah. These stations, plus national headquarters, make up the national net which holds a station roll call every Tuesday and Thursday night on 7920 kcs.

Directing CAP communications are Maj. Arthur D. Rhodes and Capt. Ralph E. Tilton, both Regular USAF officers assigned to CAP headquarters.

Breakfast Flight

THE Las Vegas, N. M., squadron sponsored a breakfast flight August 6 at the sprawling York Ranch. It was timed to coincide with the third day of the 1950 Cowboys Reunion—a top notch rodeo.

Deli-Fia Paha, Miss Hawaii of 1950, is CAP member who represented Hawaii in Atlantic City beauty pageant.

Next Year's Cadet Exchange

WITH the 1950 International Cadet Exchange completed, CAP officials are looking forward to an enlarged program next year. Although this year's exchange topped all others, the CAP leaders are predicting that other countries will join the program in 1951. They believe that eventually most of the nations outside the Iron Curtain will participate.

As reported in last month's column, some 71 American cadets made flying visits this summer to Canada, England, France, Portugal, Italy and Switzerland, while a like number of foreign cadets were air-touring the United States.

Big event of the exchange this year was the international party at Dallas, Tex., where all the visiting cadets met at the famous "Heart of the Hills" ranch as guests of Col. D. Harold Byrd, former Texas Wing Commander and now vice-chairman of the National Executive Board. High USAF officials and CAP leaders from all parts of the United States were on hand to welcome visitors from aboard.

Lucky American cadets selected for the trip to Switzerland and France received glider instruction from French and Swiss experts.

Operation SARCAP (Search and Rescue, Civil Air Patrol) was conducted during summer by CAP and Air Rescue Service. In first exercise, held in Pennsylvania, 45 private and Air Force planes participated. At left, advance party sends up flare to guide helicopter to scene of "crash." Paradoctors, who jumped at crash scene, administer first aid (center) and at right, victim is returned to airport by 'copter.

Piper PA-20 Pacer

(*Continued from page* 31)

Sensenich or McCauley prop available for exchange at $100 for all 115 and 125 *Pacers*. This increases performance considerably. Actually at low altitudes there is no difference in performance between a 125 equipped with a metal propeller and a 135 equipped with an *Aeromatic*. The increase in cruising speed with the 135 becomes apparent when flying above 5,000 feet.

It is clear with all the changes on the 1950 *Pacers* that Piper's four-place planes are here to stay. In 1949, about 1,350 planes were built at the Piper factory. Over half of these, or about 735 planes, were the four-place *Clippers*, their most expensive model. This year the factory expects to build 825 *Pacers* out of a total of 1,200 planes. The remaining 375 will be the *Super Cub*, an improved tandem trainer. They have curtailed all construction on the two-place side-by-side *Vagabond* and the three- and four-place *Cruisers*.

PIPER PA-20 PACER

Type Certificate No. 1A4

	Model "115"	Model "125"	Model "135"
Engine (Lycoming)	O-235-C1	O-290-D	O-290-D
Horsepower and r.p.m.	108 at 2,600	125 at 2,600	125 at 2,600
Wing span (ft.)	29.3	29.3	29.3
Length (ft.)	20.4	20.4	20.4
Height (ft.)	6.2	6.2	6.2
Gross weight (lbs.)	1,750	1,800	1,800
Empty weight (lbs.)	920	970	990
Useful load (lbs.)	830	830	810
Wing area (sq. ft.)	147.5	147.5	147.5
Wing loading (lbs./sq. ft.)	11.9	12.2	12.2
Power loading (lbs. /h.p.)	16.2	14.4	14.4
Baggage capacity (lbs.)	50	50	50
Fuel capacity (gals.)	36	36	36
Top speed (m.p.h.)	125	135	140
Cruising speed (m.p.h./ sea level)	112	125	134*
Stalling speed (m.p.h.)	50	48 (flaps)	48 (flaps)
Best rate of climb speed (m.p.h.)	75	84	84
Rate of climb (ft./min.)	600	810	850
Cruising range (mi.)	580	580	580
Service ceiling (ft.)	11,000	14,250	15,500
Absolute ceiling (ft.)	13,500	16,250	17,500
Fuel consumption (gal./ hr.)	7	7.7	7.7

Performance figures for "115" and "125" models are for aircraft equipped with slowest turning fixed-pitch propeller, at gross weight, and under standard conditions; those for the "135" model are for Aeromatic F200H propeller under standard conditions.

* Cruising speed at 5,000 ft. (75% power).

Source: Piper Aircraft Corp., Lock Haven, Pa.

The trend toward higher powered, faster, heavier and more expensive planes is interesting when you think of the planes Piper has been building since 1930. The E-2, J-2, J-3, J-4 and J-5 *Cubs* were all classified as lightplanes. Their engines developed less than 90-h.p. and in some cases as little as 37-h.p., and their weight, price and performance were definitely in the minor leagues when compared with the PA-20.

The actual gross weight is still only 1,750-1,800 pounds but the horsepower, load-carrying possibilities, and cruising speed place the PA-20 in a class with heavier aircraft. Remember when rent-

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• • •

I see by the newspapers where the literary people say that we don't have time any more to read novels. We hardly have time to read the books on how to relax.

• • •

DEFINITIONS

Middle age. That time in a man's life when his growth is confined to the middle.

The prime of life. The time of life when your son finds out that you don't know so much after all.

Manhood. The time when he finds out that he doesn't, either.

• • •

WHAT'S YOUR VERDICT?

On page 132 of the August issue of *Readers Digest* there is a squib headed "Sure Bets." It reads:

"When you toss a coin to decide who is going to pay the check, let your companion do the calling. 'Heads is called seven out of 10. The simple law of averages gives the man who listens a tremendous advantage.' —*Henry Hoyns, quoted by Bennett Cerf in The Saturday Review of Literature.*"

Well, kiddies, is the author right? On the average, do you have a good reason for your opinion or are you just gassing? The answer will be printed next month.

• • •

TAKING THE PRESSURE OFF

One of the finest pieces of erudite cheese that has come my way is what is called "pressure pattern flying." This is a complicated thing and was brought up by people who wanted to seem important. I took a couple of lofty courses in it, and I found out one thing, to wit, that the brains of some people can get more wrought up than the fanny of an old maid doin' the rumba, and all over nothing, too.

A glance at any winds-aloft map will show the fallacy of this razzle-dazzle, if your mathematics won't. But the system is pretty good in one way—it keeps a lot of passion-flower scientists off the streets.

Here is a case in point. A few days ago I flew my Dizzy Six from Dallas to Chicago. The barometric pressure in Dallas was a bit on the low side, being 29.87, and it was quite high in Chicago, being 31.32. Now, according to logic unfettered by facts, and according to the scientists who are wont to entertain the thoughts that entertain them, and neglecting forces like inertia and the like, air has to flow from the high pressure areas to the low pressure areas.

The truth is that sometimes it does and sometimes it doesn't, but since it is a little complicated to find out why the wind does blow as it does, the passion-flower scientists, as distinguished from the real scientists who look at the facts, make their simple statement and let it all go at that.

On this flight, you know, we should have had a strong head wind, since we were going from a low pressure to a high pressure. The fact is that we made one of the fastest airliner flights ever made from Dallas to Chicago and could have had a record, and we didn't because I think that a flying record with a bow to the wind is a bit on the silly side.

Our average wind aloft was over 105 m.p.h. The wind was blowing from the low pressure area to the high pressure area.

Well, as Sadie says, there sure are a lot of unemployed people that got jobs.

• • •

NAY MAN CAN TETHER TIME NOR TIDE

The Dizzy Six was, as Sadie puts it, wending its way through the sky and it was a little dull so high up, and a gabby passenger asked Sadie as she served his coffee, "If a woman gave birth to a child on your plane, what would you do?"

Sadie thought a moment. "I'd do what they do in Norway when it snows. I'd let it snow."

• • •

Well, it looks like the only people who are making hay these days are the cigarette people.

• • •

THAT'S WHAT HE SAID

The Dizzy Six was still at the loading platform several minutes after it was scheduled to take off. A passenger asked Sadie, "What are we waiting for?"

"Our tanks are loose," she answered.

"Good Lord, are you sure?"

"Well, yes," she said. "I heard the captain tell the mechanics to stick the tanks."

• • •

EPITAPH

Our Will was flying IFR,
So safe, alas, alack;
Another bird was CFR—
We gathered Willy in a sack.

ing or flying a 24 Fairchild or a Kinner *Fleet* was the apex of most pilots' ambitions?

I arrived at Cub Haven late in the afternoon and flew the *Pacer* the next morning.

A *Pacer* 135, N6910K, was rolled out of the hangar and I looked it over. It was blue with a cream stripe. The PA-20's are also available in green, maroon, cream or brown, each color with a contrasting trim.

I checked to make certain the fuel selector valve was on left tank (for take-offs and landings), reached below the seat and turned on the master toggle switch. A few shots of prime, mag switch on both, and the engine fired at once. The starter is located under the pilot's seat with the master switch and is easily reached with the left hand. The mixture control should be set at full rich and should be left there at all times when the plane is being operated at low altitudes.

The front seat adjusts fore and aft but even with the fuselage gas tank removed and sticks replaced with control wheels it is a little difficult to climb in and out of the pilot's seat through the right door. My size didn't help either—but everything was comfortable enough once I managed to get seated.

The visibility over the nose is as good as can be expected with conventional gear. By pulling myself forward I could see the ground a short distance ahead on either side of the nose. A shorter man might have more trouble but the seat adjustment and "S" turns while taxiing should take care of taxiing visibility. Luke Blume of the sales department rode with me.

At the end of the runway I checked the mags and carburetor heat and opened the throttle for take-off. Despite heavy slush and water on the ground the *Pacer* accelerated rapidly and we were airborne in exactly 12 seconds. From there, I timed a climb to 1,000 feet in exactly one minute. This agrees pretty well with Piper's claim of an 850-feet rate of climb with full gross load. We were operating at somewhat less than maximum allowable weight. When I flew last year's *Clipper* the plane's performance when loaded with two or four people changed only slightly.

The ceiling was quite low at Lock Haven the day of the check flight and I could not check cruising speeds at altitude. At 1,500 feet above sea level, however, the 135 indicated better than 130 m.p.h. at 75 per cent power—or about five m.p.h. better than Piper claims. Both the 125 and 135 will cruise better than 125 m.p.h. at altitudes up to 5,000 feet. The 115, with smaller engine, is about 10 miles slower. But with a metal prop installed on a 125 there is little or no performance difference in the 125 or 135 when you are flying the two planes at altitudes below 5,000 feet.

The PA-20 I flew was equipped with every possible extra, including S.F.I. This stall warning indicator buzzed a warning about 10 m.p.h. above stalling speed. The *Pacer* stalls at about 55 m.p.h. without flaps and about 48 m.p.h. with full flaps lowered. The flaps are adjusted by

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BETTY SKELTON'S NOTEBOOK

SIMPLE SOLUTION

BILL BRENNAND, Oshkosh, Wis., race pilot, gave the audience at a New York air race some bad moments when the engine of his midget, *Buster*, cut off on take-off and coughed around the race course. Later Bill was seen installing a length of rubber hose inside the cockpit and from then on there was no more cutting. He was getting the results by blowing air into the gas tank with his mouth! And you guessed it, he won the race . . .

ON-THE-BALL AIRPORT

Visited Detroit City Airport and have never seen a tower crew more on the ball, or met a nicer flight operator than GRAHAM PRINCE. Hard to believe that a petition to close this airport has been signed by over 30,000 Detroit residents. Certainly would like to see this first-class airport remain open—it's really convenient to the center of the city. The people of Detroit should be giving it their whole-hearted support instead of trying to close it!

ALMOST, BUT NOT QUITE . . .

Landed at Clintonville, Wis., and was doing a little hangar flying behind the counter of a small feeder line when an irate gentleman walked up. "What time is your next flight in?" he asked. The airline agent replied, "In two minutes, sir." The man then smiled broadly and pulled out a cigar. "Congratulations! This is the first time I have known your flights to be on schedule in months." The agent sighed heavily. "Thanks a lot, mister, but keep your cigar. This is yesterday's flight . . ."

LEAVE YOUR CHUTE AT HOME

Sure learned the hard way how *not* to win friends. Climbed aboard an airliner in Washington recently en route to Wichita. Boarded hurriedly—without time to check my chute—and found the stewardess highly insulted. Seems she felt I didn't trust the airline. Other passengers became very disagreeable after asking for *their* chutes and learning that there weren't any. Even the pilots gave me a withering look at our first stop. Result—no one spoke to me during the entire trip!

HORSEPOWER AND INGENUITY

A one-time race car driver, JOHN SPACH of Wilmette, Ill., rebuilt an old V-3 Davis monoplane for his personal use. Spex for the *Spach Special* are: Warner 185-h.p. engine, *Aeromatic* prop, gross weight 1,471 pounds, length 20 ft. 1 in., height 6 ft. 9 in., prop diameter 85 inches. Rate of climb is 1,500 f.p.m., cruising speed 115 m.p.h., and top speed 135 m.p.h. John's plane is a good example of what horsepower and ingenuity can do. The original Davis cruising speed was only 80 m.p.h., and its top speed only 90!

ROAD HOG

PHIL QUIGLEY gave a Tennessee motorist a surprise he won't forget for a long time. . . . While flying to Chattanooga from his hometown in Florida, Phil was forced under a low ceiling and, low on gas, he scanned the hills quickly for a landing spot. There wasn't one in sight but a filling station ahead gave him an idea. He greased the 15-foot-span midget down on the highway. Only one hitch. As the plane rolled up over the top of a hill, Phil found himself face to face with a car coming up from the opposite direction. Both swerved—just in time. Said Quigley, "You should have seen their faces. I was expecting an auto, but they darn sure weren't expecting an airplane!"

Betty Skelton

a fast action lever located at the lower middle of the front seat. They can be adjusted to three positions: up, half, or full, and are installed as standard equipment on 125 and 135 *Pacers*.

The flaps do a lot to improve one of the biggest complaints on last year's *Clipper*, namely a high rate of sink. In a glide at 75 m.p.h. without flaps the plane settles pretty fast and the flare-out must be just about right or you hit the runway harder than is comfortable. With full flaps lowered the PA-20 becomes quite another plane during glides even as slow as 70 m.p.h. and there is plenty of elevator left for a nice smooth flare-out before landing.

Unless you set the overhead stabilizer adjustment fairly tail heavy the PA-20 tail will bounce along the runway on a full flap landing. Spilling the flaps will also keep the tail on the runway if you prefer this system. But the glide pattern with full flaps down should prove satisfying to any who have flown the PA-16 *Clipper*.

The PA-20 seems to glide best at 80 m.p.h. without flaps and touches the runway at 55 m.p.h. With flaps lowered the respective speeds drop to 75 m.p.h. and 48 m.p.h.

After taxiing the plane back to the hangar these were my observations and opinion of the *Pacer*:

Piper now has a plane that can approach the cruising speeds of aircraft selling at twice the price of the PA-20. The gasoline capacity and cruising range have been upped. Refinements in both looks and comfort have been added yet the price is still the lowest of any four-place plane. The 1950 model is quiet enough for loud speaker radio operation and the cabin ventilation has been improved.

In criticism of the *Pacer* I believe it is a little awkward for a man with a top coat or a girl dressed in a skirt to enter and leave the front seat. If you are tall, ceiling height won't permit you to wear a hat. During landings the plane is tail light if flaps are lowered. Many instruments necessary for safe cross-country flight—such as radio, lights, and primary group—are priced as extras. With cruising speeds as high as those of the PA-20 these are necessary accessories, in my opinion, and should be standard equipment.

There is one problem with the *Pacer*, however, which prospective buyers should understand. While it will carry four 160-pound persons with baggage comfortably, you can't take off with full tanks with this load. Useful load of the 115 and 125 is 830 pounds. With four persons averaging 160 pounds, and 50 pounds of baggage, there is load available for only 23 gallons of gasoline. This would give a little more than three hours' cruise. The *Pacer's* tanks carry 36 gallons of fuel so if you have full tanks, the four persons had better be pretty light.

Nevertheless, the *Pacer* will transport your family three times as fast as your automobile, and at less cost per mile. Where it can be used economically, it is truly a "family car of the air." END

Gold in the Jungle

(Continued from page 22)

from their description, was at the foot of his rainbow. It was evident the miners had come a great distance. Tattered clothes, grimy boots, and bushy heads of unshaven hair suggested great hardship and privation. The miners, it developed, had traveled several days overland on foot for provisions. Some of them wanted to return to Ciudad Bolivar for equipment and to cash in the sudden wealth. Dazed, Baughan had a hunch and began doing a little aerial prospecting of his own. That hunch, conceived in the spring of 1947, was an airlift which lead to the extraction of 130,000 carats of diamonds during the first two years that it operated.

"What about the geography of Icabaru?" Baughan asked, visualizing a shoe-horn landing strip on some mountainous ledge.

"*Si, Si, señor.*" The men, comprehending, conjectured on the possibility of a landing field. One miner pocketed his loot in order to demonstrate the spoon-shape of an elongated valley. All agreed it was a larger belt than Santa Elena but Baughan decided to do his first reconnoitering with a Luscombe.

Several days later and 30 air-minutes from Santa Elena, the pilot found a mountainous area resembling the cavity of a gigantic tooth, bounded on one side by the shimmering Icabaru River. Circling it several times, he studied the slope, noting a few thatched roofs studding the river margin—the public plumbing works. He prepared for an emergency bush landing and the plane rollicked like a roller coaster before coming to an abrupt halt in the blazing sun.

Natives, abandoning *bateas* and *sirucas*, raced to the miraculous craft and the gringo who, thoughtfully, had brought food staples and equipment. Manna from heaven would have been no less welcome. Baughan, proclaimed hero of the hour, was feted and dined and laden with souvenir nuggets. Overjoyed miners promised to clear the strip of its brush if he would again visit the forgotten frontier.

Baughan found the miners were surface mining, scratching the earth for samplings before working a pit. The good earth, in washed-out pits, yielded rich deposits of diamonds. A lucky strike and miners could pick up carats like so many heads of grain, many of them greenish-blue in color.

Yes, Baughan's valley, later Icabaru Village, was verdant, ready to be plucked commercially by TACA airlines. The enterprising pilot got some statistics; the population at that time numbered about 600 miners and families. As supervisor of TACA operations in the Gran Sabana, he recommended regular service to the promising mine area.

Skeptical TACA officials were flown in and convinced of Baughan's transportation lode. Increased pay-loads early justified the venture and by May of that year, TACA was providing regular service. Averaging 6,000-pound loads, TACA

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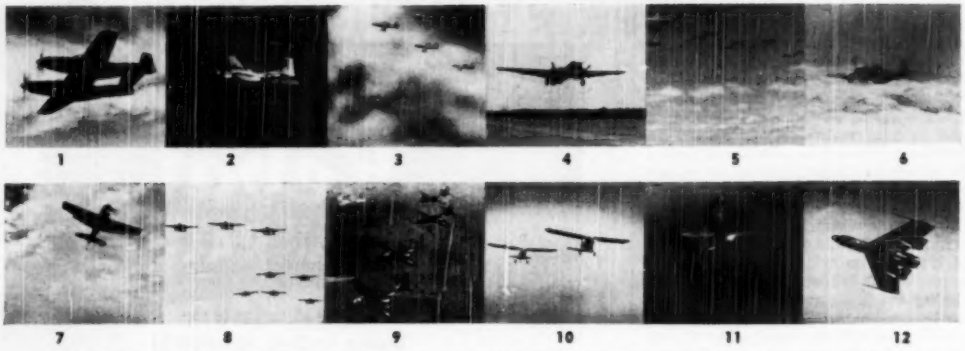


1 2 3 4 5 6

7 8 9 10 11 12

(1) North American P-82. (2) Douglas B-26. (3) Lockheed P-80. (4) Martin P4M-1. (5) Consolidated Vultee B-36. (6) North American F-51D. (7) Grumman F6F. (8) Fairchild C-82. (9) McDonnell FH-1. (10) Sikorsky S-5. (11) Martin PBM-3. (12) Chance Vought F7U.

planes transported cargo ranging from live hogs to Diesel units, foodstuffs constituting the major item. With air transport, miners were abandoning less productive regions such as Guari, San Pedro and Tumeremo and joining the gold rush of Icabaru. Backlogs of freight often required triple plane service in a single day but, notwithstanding, these increased operations did not upset TACA's unbroken safety record for Venezuelan operations.

The boom town now is aerially served also by the government-subsidized *Linea Aeropostal Venezolana* which has weekly connections with Boa Vista, Brazil, for factory items from Sao Paulo and Rio de Janeiro, Brazil. Geographically, Icabaru is a frontier threshold more closely identified with Brazil, a factor influencing Brazilian miners to pioneer mining ventures in the region. Today the population of Icabaru numbers 8,000, including miners in the field.

That figure, Baughan mentions, does not include a canine population which is sizeable. Dogs, apart from companionship, are important to warn against dreaded bushmaster snakes. Dogs, pigs or fighting cocks—an important item in the airlift—are transported into Icabaru with equal zeal.

Like a village mayor, Baughan strolls through the streets, pointing out recent developments. Name of the main street, naturally is TACA Avenue; and if the village continues its mushroom growth possibly there will be a Baughan Boulevard. The village boasts of two movie theatres—with stilted seats—a branch post office, an infirmary and other units considered essential to modern pioneer progress.

Baughan, much as a pilot in the Berlin Lift, is greeted everywhere. As a hero-founding father, he is the recipient of semi-precious stones as well as a filter for success and hardluck stories galore. Grubstakes? Well, much as he resembles a football quarterback toughie, he's soft-hearted and amenable to grubstaking. Why not? he asks. Miners fundamentally are honest. He has had very few experiences with dishonesty and theft.

Baughan, upon plane arrival, is met by one of 12 national guardsmen who check inbound and outbound freight. Liquor, as are prostitution and nightclubs, is taboo. Discharged cargo is handled by porters, an essential part of the lift. Especially Pilar Garcia who, when an ox bogged down with a 180-pound safe, got on all fours and lifted animal and cargo from a mud hole.

Baughan's own personality overshadows that of Icabaru in color. It took him 12 years to recover his right age after exaggerating the truth to get into flight service during World War I. Documents substantiate his birth at Harrelson, Ga., on September 6, 1902. It took him a longer and more difficult time to realize his lifetime ambition—to fly huge air carriers across the oceanic crossroads. A veteran barnstormer who did aerial circus work and test piloting, Baughan met up with ill-luck when his plane crashed in flames following take-off at Lomax, Ill. He underwent plastic surgery and, although two years later he recovered his wallet with $140, he never recovered his former handsome profile.

Between wars, he also flew by gauge in Mexico. Then, equipped with more guts than finances, he started a flying school at Kingsport, Tenn. Virtually a cowpasture, it was nicknamed the Long Island School of Flying. But foreseeing Fracas Number II, Charlie got a bug to fly American bombers to Britain. He could, providing he had an instrument rating, the CAA inspector advised. That would have meant three months' additional schooling. The school of motor knocks, dangerous crates and gauge gadgets didn't satisfy technical requirements so Baughan decided to go to Montreal, Canada.

"I don't see your instrument rating," the RAF Chief of Operations mentioned.

"That piece of paper won't keep my feet out of the ocean, sir," Baughan replied, "but my ability to fly on instruments will."

That was the start of Baughan's ferrying career to help bridge the Atlantic with propellers. During the next 4½ years, he made 126 crossings, relying alternately on the seat of his trousers and instruments.

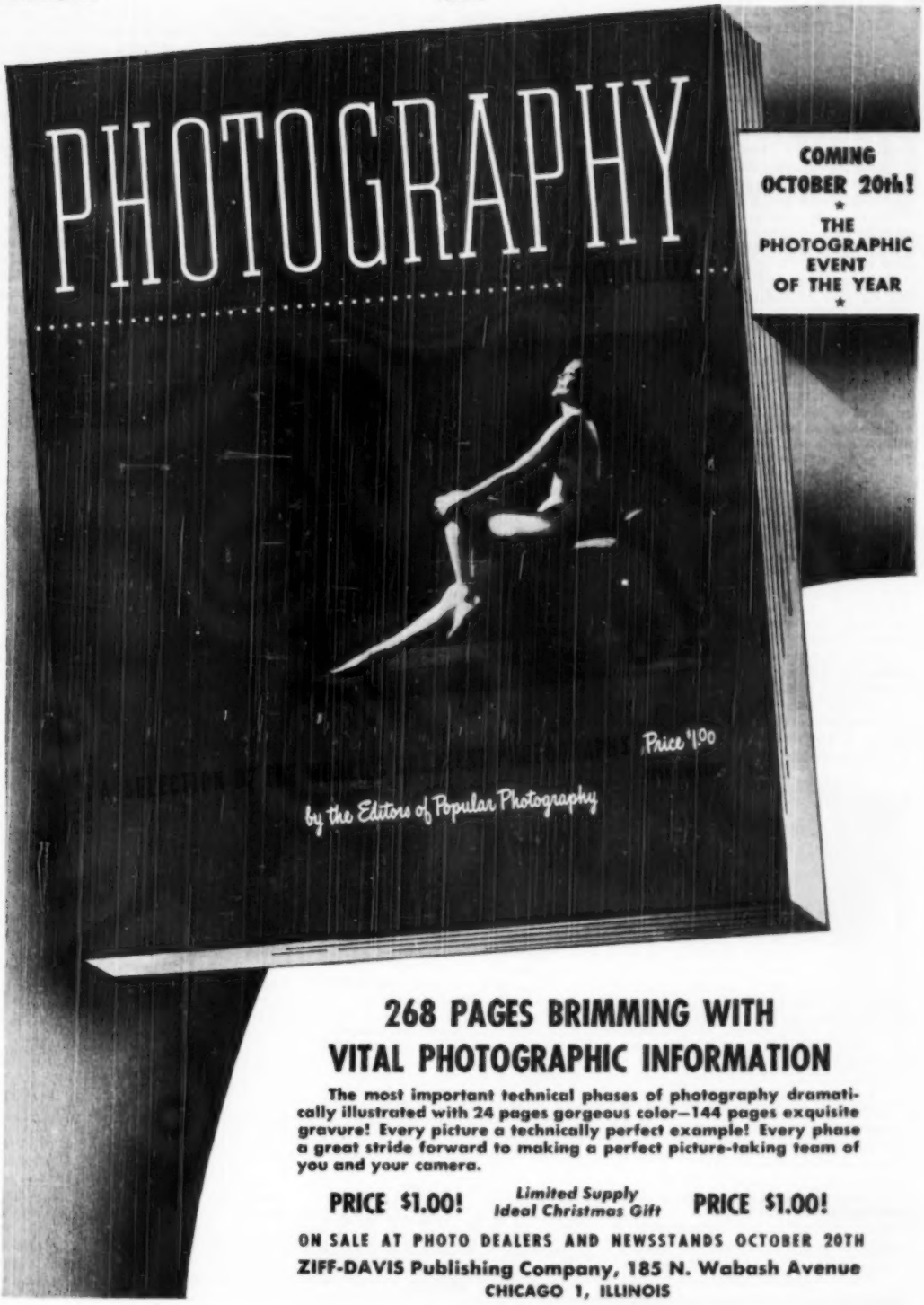
After several narrow escapes, Charlie had spent his luck and was shortly hospitalized for a broken ankle acquired in a wrong-way traffic accident "somewhere in Australia." A broken ankle was nothing compared to discovery, upon return to the U.S., of a broken marriage and divorce. Grounded in disappointment, he took a flying job in Venezuela. Shortly after making his first flight on New Year's Day, 1947, Baughan found Icabaru at his feet.

"There really is a pot of gold at the foot of the rainbow," Charlie reminisces. "I recall that every afternoon when there was a thunderstorm at Peraitepuy, the right end of the rainbow always hung over the southwest valley where Icabaru stands today."

More than a pot of gold, Baughan discovered a melting pot of nationalities. He found a democratic community where equality of sexes existed, women miners working alongside of men. Color barriers are non-existent, a good many English-speaking Negroes from Jamaica and Trinidad contribute their part to the community. Isolated natives are receptive to modern invention, a luxury which can be indulged because of the airlift. Because labor is scarce for cutting trees, Charlie found natives importing corrugated aluminum.

"Prefabbed housing is a recent innovation," Baughan says. "It's cheaper than timber even if the necessary labor were available."

Although the life expectancy of the town is ephemeral judging from that of less important mine centers, its airlift is destined to go down in Venezuelan history as a major factor in exploitation of that frontier. And Charlie Baughan surely will be immortalized by Venezuelans along with Henry Clay as an American contributing immeasurably to Venezuela's progress. END



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Cruise Control

(*Continued from page 24*)

settings obtained from these charts, you can work out a complete cruise control schedule like that in Table I. It is valid for a typical lightplane with maximum range based on a 13-gallon usable fuel supply. To show the difference in effect of a quartering wind and a wind directly on course, ranges are calculated in Table II for the same engine speeds and wind velocities as in Table I—but with the wind quartering from 45° left or right of your course.

With an abbreviated placard similar to this on your instrument panel you'll be able to figure cruise control settings with accuracy.

For example, say you're flying along with a headwind of 30 m.p.h. Referring to Table I, you find the optimum engine speed is 2,100 r.p.m., giving you a ground speed of 48 m.p.h., a time in flight of 3:02 and a range of 145 miles. If you used an engine speed of 2,000 r.p.m. you'd get a five m.p.h. slower ground speed, an 18-minute longer time in flight, and two miles less range. If you used 2,250 r.p.m., your ground speed would be seven m.p.h. greater, time in flight 29 minutes less, but you'd have a five-mile shorter range.

At first glance, these differences in range seem insignificant. But remember that the normal cruise engine speed (2,400 r.p.m.) and corresponding fuel rate (5.9 g.p.h.) are much higher than the optimum values. Consequently, the range you'd get at normal cruise would be considerably less under all moderate wind conditions.

Although data used in the foregoing example are based on the sea level performance and a temperature of 60° with full gross weight, use of the cruise settings under average load and weather conditions wouldn't result in appreciable error.

When using cruise control techniques, keep these facts in mind:

- If the engine is placarded against continuous operation at certain speeds, you'll have to shape your cruise control system to fit this limitation. Restricted engine speeds are usually in the minimum speed to low cruise range. This speed range is often a useful one for moderate winds *but you should use permissible engine speeds closest to those found on the cruise control chart.*

TABLE I

Head-wind m.p.h.	Air-speed m.p.h.	Gr'nd Sp'd m.p.h.	Fuel Rate g.p.h.	Endur-ance Hr: Min.	Range Miles	Engine r.p.m.
−15*	66	81	3.5	3:43	301	1900
0	70	70	3.7	3:31	246	1950
15	73	58	3.9	3:20	193	2000
30	78	48	4.3	3:02	145	2100
45	85	40	5.1	2:33	102	2250

* Tailwind.

TABLE II

Wind m.p.h.	Air-speed m.p.h.	Gr'nd Sp'd m.p.h.	Fuel Rate g.p.h.	Endur-ance Hr: Min.	Range Miles	Engine r.p.m.
−15*	66	76	3.5	3:43	282	1900
0	70	70	3.7	3:31	246	1950
15	73	62	3.9	3:20	206	2000
30	78	54	4.3	3:02	164	2100
45	85	47	5.1	2:33	120	2250

* Quartering from the rear.

- If your engine has a mixture control and you fly at high enough altitude to use it, your range for a given headwind can be increased. Generally speaking, for a given wind the optimum engine speed is lower with a lean mixture than with a rich mixture. Engine operating instructions recommend that mixture control be set at full rich below 5,000 feet. Above 5,000 feet, you can adjust the control to give a mixture just richer than that required for maximum r.p.m. at a particular throttle setting. Too lean a mixture can cause engine overheating so it's a good idea to install a cylinder head temperature gauge.
- To set up your desired cruise conditions, it's best to use the tachometer because the airspeed indicator requires correction and is more subject to error.
- Since a pure headwind represents the worst and a pure tailwind the best flight condition, a general rule to follow is: the higher the headwind, the higher the airspeed.

To show how cruise control can be used in flight, here's an account of the recent experiences of a friend, Bob Nelson. On Bob's instrument panel is a schedule like that below. In his glove compartment is an E-6B computer.

SEA LEVEL—FULL RICH

Normal cruise, 2,400 r.p.m.; 5.9 g.p.h.; airspeed, 91 m.p.h.

Wind	Airspeed	G.P.H.	R.P.M.
−15	66	3.5	1,900
0	70	3.7	1,950
15	73	3.9	2,000
30	78	4.3	2,100
45	85	5.1	2,250

Bob planned a flight to a back-country logging camp, 130 miles from his home airport. Headwinds aloft were reported at 10-15 m.p.h. up to 3,000 feet, increasing at higher altitudes with a probability of increasing at lower altitudes. With 13 gallons of usable fuel plus two gallons reserve for take-off, climb and landing, Bob estimated his range at normal cruise with a 15 m.p.h. headwind as 168 miles. With no alternate airport, but with a range margin of 38 miles, Bob started out.

After 20 minutes, Bob estimated his ground speed at 60 m.p.h. with a direct headwind of about 30 m.p.h. At normal cruise, he had covered 20 miles and had burned two gallons of fuel along his course at cruising altitude.

As indicated on the cruise control schedule, he throttled back to 2,100 r.p.m. and made these estimates for the remainder of the flight:

Distance to go.....110 miles

Range at 2,400 r.p.m., 30 m.p.h. headwind, 11 gallons.....114 miles

Range at 2,100 r.p.m., 30 m.p.h. headwind, 11 gallons.....123 miles

It was obvious that it would be unwise to continue at normal cruise with a range margin of only four miles—so Bob decided to fly at 2,100 r.p.m. halfway to destination and, if the wind held at 30 m.p.h., to continue with a range margin of 13 miles. If wind had increased at the halfway point to more than 30 m.p.h., he would return to the home airport.

Midway along the course, Bob made the following estimates:

Elapsed time	1:15
Fuel used	6 gal.
Fuel remaining	7 gal.
Ground speed	48 m.p.h.
Headwind	30 m.p.h.
Distance to go	65 miles
Range at 2,100 r.p.m., 30 m.p.h. headwind, 7 gal.	78 miles

Since the headwind hadn't increased, and since he had a range margin of 13 miles, Bob decided to continue to destination at 2,100 r.p.m. He landed at the logging camp after flying 1:20 on the last half of the trip. He had used slightly less than 13 gallons of the 15 gallons aboard at take-off. END

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Twenty Thousand Pilots

(*Continued from page 18*)

set on flight. John Anthony, a Martin County, Ind., farmer attempted to fly in 1870. He constructed a huge kite-like contraption in which he jumped from the roof of his barn. While the kite slowed his descent enough to prevent injury, Anthony wasn't credited with flying, and the honor of starting the flying farmer movement can't go to him.

Thirty-nine years later, in 1909, Uscher Rousch, a Crawford County, Ill., farm boy seized this honor in an airplane built in his mother's barn. For almost a year Rousch, just 18, spent every minute he could spare from his farm work designing and constructing a queer bird-like machine.

The wings made of bamboo poles were covered with a fabric purchased in a nearby department store. Power was furnished by a twin-cylinder motorcycle engine.

One bright Sunday morning, Uscher pushed the machine from the barn and, after considerable tinkering, pronounced it ready to fly. A curious crowd of neighbors watched. "Man is silly or worse to try to fly," was the general concensus of the spectators.

Then Uscher was careening wildly across the pasture, engine wide open, propeller whirling. But the airplane wouldn't leave the ground. A section of the up-wind fence was taken down to provide a longer runway. On his second trip Uscher fairly hoisted the machine into the air and made it fly at an estimated 40 to 50 miles per hour.

Having sprouted wings, Uscher eventually found the call of aviation so strong that he left the farm to his younger brothers Charles and Berl. But they too were bitten by the flying bug and left the business of farming to less imaginative hired help. Gradually the farm became a proving ground for the two young flying farmers who designed and built two biplanes that flew remarkably well for their day. Their mother, now 80, keeps freshly painted to this day a big sign on the roof of the home farm barn. In box-car letters it says, "Flying Rousch's Farm."

From the day Uscher Rousch silenced his skeptical neighbors, farmers have played an ever-increasing role in the development and use of the lightplane. Typical is the Ed Moody family of Moultrie County, Ill. When Hunter, Ed's oldest son, was nine years old, he persuaded his dad to give him money for a short passenger hop in an airplane at the local county fair.

That one ride did it. At 14, after four hours of instruction, Hunter was flying. Then in 1929 Ed bought him his first plane, a Hisso Standard, which he flew off a rolling strip hastily laid out in the pasture in front of the house. A year later they stepped up to a larger plane—a Waco.

During 1936 and 1937 Hunter established a record probably unequalled anywhere when he took 185,000 passengers for rides without a single accident. His biggest day was at Kingsport, Tenn., when he "hopped" 951 passengers from sun-up to sunset.

Later, Hunter and brother Humphrey brought national attention to aviation by setting a world's endurance record at Springfield, Ill. After most of the farm work was out of the way, they climbed into their plane and flew non-stop for slightly more than 15 days.

Today, flying farmers constitute the biggest and healthiest single segment of private aviation. Just where the first flying farmer organization came into being is a debated question. In the fall of 1944 some 38 rural pilots met at Stillwater, Okla., and formed a state organization. At about the same time a large group from Vermillion County, Ill., hoisted their lightplanes off the farm airport of Ellis Volkel for a mass flight to Chicago. This week-end trip, which caught the fancy of rural pilots in the states adjacent to Chicago, brought about the formation of an organization a few weeks later.

Which was first isn't important. But it is important that as a result of these meetings there are now flying farmer organizations in almost every state in the union. Four of the states (Illinois, Indiana, Wisconsin and Michigan), where problems are pretty much the same, are banded together into a regional group. All the state organizations, including those in the regional group, make up the National Flying Farmer Association, whose prime purpose is to encourage the use of the airplane on every farm in the country.

The National Flying Farmers Association was organized in January, 1946, with headquarters at Stillwater, Okla. It is a federation of some 40 state flying farmer organizations. Control of the National is in the hands of a board of directors with one representative for each member state.

Membership in the National is $3 per year on an individual basis, or $4 for a family membership. State dues are $2 per year in most states, with the exception of Illinois, Wisconsin and Indiana, where only $1 will buy a year's membership.

Flying farmers must belong to a state organization to be eligible for membership in the National Association; however, state members do not have to join the National unless they so desire except in a few states. The National membership has been growing rapidly and is now well above the 5,000 mark.

The National Association's four point program is in large measure responsible for the ever-increasing membership. Briefly stated the program is:

1. To promote the educational and scientific development of, and to advance the use of, the airplane in America's agricultural industry.

2. To cooperate in research aimed at improving aircraft designed for agricultural use.

3. To promote facilities that will encourage and advance rural aviation.

4. To serve as a "clearing house" for the rural pilots' ideas, opinions, wishes and needs, and to be a medium through

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which the public and the aviation industry may be made aware of these ideas and problems.

It is estimated that there are more than 20,000 flying farmers in the nation. A recent survey indicates that approximately 60 per cent own planes. The remainder buy time.

It would be stretching a point to say that to most farmers the airplane is "just another farm tool." Like the early automobile it doesn't yet have enough utility to be placed in that category except in special circumstances. Most flying farmers, nevertheless, are getting more utility out of their planes than their fathers got out of the first automobiles.

The utility of the farmer's airplane is cut short because there are not enough landing strips, much as the early automobile lacked utility because there were no improved roads. That automobile was a thing of joy to the farmer and his family but it couldn't go to enough places.

Mechanically the early automobile left much to be desired. It couldn't be driven in bad weather. If caught out at night, the carbide lights usually wouldn't burn. The motorist had to grope his way blindly to his destination or wait patiently for daylight.

In this respect Ellis Volkel and his fellow flying farmers will argue that today's light airplane has it all over the early automobile. Nevertheless they also complain that today's airplane cannot be slowed down so it can be flown safely in bad weather. Neither can most planes be flown in and out of short strips. And night flying is far from a reality for the average flying farmer.

Flying farmers are unhappy about these things but they are not discouraged. They have their own broad program for "better flying."

The National Flying Farmers Foundation, for instance, is giving valuable aid in the development of a specialized airplane for dusting, spraying, seeding and applying fertilizer. (See "Report on the Ag Plane," July FLYING). The Foundation established some two years ago will correlate research in the aviation-agricultural field.

Much is also being accomplished on a state and regional level. In Ohio the State Aviation Board recently created the office of Agricultural Aviation Coordinator. Ralph E. Young, president of flying farmers in that state, was named to the post.

Individually, flying farmers are building hundreds of landing strips on their farms. Iowa flying farmer officers estimate that they have 350 such strips in their state. R. S. McFarland, Mississippi F. F. president says, "Only a guess, but easily 300."

Madison County, Ind., and DeKalb County, Ill., have demonstrated that getting farmers to fly isn't such a big job. In Madison County, three airport operators joined hands and enlisted the aid of a live wire flying farmer. Cooperatively they built F. F. membership up to almost 200 in a short three years. They go on the theory that organizations of all kinds must have periodic revivals. Theirs come early each spring when they stage a big fish fry. The last one was attended by more than 1,200.

DeKalb County, Ill., also has close to 200 members. Again it is a case of everyone working as a team to sell flying. Under the leadership of Tuck Walker, a farmer-businessman, the DeKalb folks have something going on every week in the year. As a result of their program flying is constantly on the increase in this area.

As a means of recreation, the farmer finds the airplane the answer to his prayers. He has never cared much for golf or some of the other games followed by his city cousins. He gets his exercise and fresh air right on the job. Instead of going back to the soil for recreation he wants to get away from it. The airplane enables him to go places and do things his father never dreamed of. He loves it. That is the big reason why farmers do not fly for a year or so and then suddenly drop out of the picture as so many other pilots do.

Given worth-while events, farmers in large numbers will fly almost anywhere. Last year more than 800 from the Midwest flew all the way to Pensacola, Fla., for a five-day familiarization tour of that Naval Air Station. The day they spent at sea on the Carrier USS *Cabot* is still being talked about.

That trip sold flying to a lot of farmers back home who want to get in on the fun too.

Living close to creation, the farmer is basically religious. He doesn't care much for Sunday morning breakfast flights, since they take him away from church. He will get in his airplane, however, and fly hundreds of miles to hear an unusually good sermon, just as more than 300 midwestern flying farmers did recently when they flew to Winona Lake, Ind., to hear the great lay-minister R. G. Letourneau.

The reason for Flying Farmer interest in private flying is obvious. The airplane brings a new freedom for most farmers, enabling them to shake off many of the shackles imposed by their isolated rural living. END

THE LIBRARY

HITCH YOUR WAGON, by Clayton Knight and Robert C. Durham. Published by the Ball Publishing Company. 375 pages. Price $3.50.

To attempt to encompass Bernt Balchen within the covers of a single book is like trying to contain, in a cheesecloth bag, the stratospheric winds that range his Polar world. This the authors have ably done, and with a wealth of intimate detail heretofore known only to Balchen himself.

His experiences on Polar expeditions with Amundsen, Byrd and Ellsworth, his rough-and-ready flying in the Canadian North, and the rescues in which he participated brought Balchen recognition as an outstanding expert on Polar flying.

When World War II came, his exceptional talents were quickly put to use. Here, for the first time, we learn how the Nazis were blasted out of Greenland and cut off from the source of their long-range weather forecasts to which Hitler's major offensives were keyed. The heroic rescues of young ferry pilots who crashed on the treacherous Ice Cap have no counterparts in any theater of war.

Here, too, told for the first time and in the best cloak-and-dagger tradition, are the exciting stories of how Balchen established an aerial life-line to the Underground that helped liberate Norway. It would take a Balchen to plot out the mechanics for kidnapping Quisling, for raiding the Nazi military headquarters, for outwitting the Russians with their own tricks.

Authors Knight and Durham have done a splendid job in telling the story of aviation's most colorful figure.

—CAPT. EDDIE RICKENBACKER

STRATEGIC AIR POWER—THE PATTERN OF DYNAMIC SECURITY, by Stefan T. Possony. Published by The Infantry Journal Press, 1115 17th St., N.W., Washington 6, D. C. 313 pages. Price $5.

This weighty, academic presentation by a "student of war," now teaching at Georgetown University, is as currently significant as any book on airpower can be which fails to consider Russia as a prospective enemy or intercontinental bombing as a prospective weapon. Thus, while it hardly measures up to the publisher's promise of showing what airpower "may be expected to accomplish if we are forced into World War III," nevertheless this book is a worthy reference work by virtue of its exhaustive research into the complexities of airpower, and particularly its objective and comprehensive appraisal of strategic bombardment in World War II (the author is at his best when dealing with target analysis).

Dr. Possony pursues a scholarly, middle-road course in the Air Force vs. Navy controversy, believes the battleship is here to stay, and stoutly defends carrier aviation. He tackles the vexing problem of how to mesh adequate national security into our peacetime economy, but unfortunately contributes little of consequence toward its solution.

His major thesis: that American airpower can assume the position enjoyed by British sea power in the 19th century and thus become a great force for maintaining peace.

—JAMES H. STRAUBEL
Editor and Publishing Director of
Air Force Magazine

Our Jets in Korea

(*Continued from page 21*)

where the turbojet engine found its most fertile field. The Lockheed F-80C has a top speed of 600 m.p.h. That means it can catch an enemy bomber flying at 400 m.p.h. 50 miles away in just 15 minutes! It will whip past the bomber at 200 m.p.h., spray it with six .50-caliber machine guns—and it's all over! That is the fundamental tactical operation of the pure jet fighter. Against a retreating enemy jet fighter, with a speed of 500 m.p.h., the action is the same—except it will take twice as long to catch it!

But the Korean war—or any other war—isn't quite that simple. Although fighter strips were under construction in Southern Korea as this was being written, the F-80's were operating from Ashiya and Itazuke Air Bases on Kyushu, about 300 miles from the battle. The F-80C carries about 750 gallons of kerosene, or approximately 5,000 pounds of fuel including tip-tanks. About 600 pounds of this is used up in warming up, taking off and climbing out of the fighter base.

The Allison J-33-A-23 turbojet engine used in the F-80C uses about one pound of fuel per pound of thrust per hour under static sea-level conditions. Since the F-80C cruises at about 450 m.p.h. on roughly 3,600 pounds of thrust, that means 3,600 pounds of fuel per hour of its operation at sea level. Allowing 1,000 pounds of fuel for 15 minutes of combat, the remaining 3,400 pounds of fuel permit the F-80C a round-trip distance of only 210 miles at sea level—and the action is well over 300 miles from base!

Happily, however, the turbojet engine works better the colder its inlet air becomes—and that means altitude. Operation of the F-80C at 40,000 feet cuts its fuel consumption by *two-thirds*, providing an equivalent increase in its range. But this solution is not as simple as it sounds. It takes the F-80C 10 to 12 minutes to climb to 40,000 feet (depending on conditions) and that means that it has used up about 1,000 pounds of fuel while covering only about 100 miles from base. Assuming 15 minutes of combat, the remaining fuel will provide it with a combat radius of 560 miles. If the distance to be covered to the action is less, say 300 miles, then the 1,300 pounds of fuel saved can be expended in an additional 20 minutes of combat, or 35 minutes in action altogether.

But the F-80C would find itself lonely indeed 40,000 feet above the battle in Korea! With nothing to fight it would find that its great speed and improved fuel consumption was entirely wasted—the action is down at the 15-25,000-foot level. But as the F-80C drops down from 40,000 to 30,000 feet, its fuel consumption increases about seven per cent; down to 20,000 feet its consumption has climbed 14 per cent! The inevitable result is a restriction in its range and the same problem repeats itself endlessly: the fundamental tactical consideration in turbojet-powered fighters.

Consider now the North American F-51H *Mustang* fighter powered by a Packard V-1650-11 engine. This propeller-driven fighter carries a mere 475 gallons of gasoline, only two-thirds that of the F-80C. Using only 450 pounds of fuel an hour, the F-51H can cruise for 6½ hours, or about 2,600 miles. This means that the *Mustang* can cover the 300 miles to the combat area in about 45 minutes and have *five hours* to cruise the area seeking Red fighters! The North American F-82E *Twin Mustang* can patrol the area for *10 hours!*

With these basic technical facts in hand, it becomes possible to analyze the fighter aircraft requirements in the Korean war. If there were 500-m.p.h. Red fighters or bombers to be caught and destroyed, both the *Mustang* and *Twin Mustang* would be helpless with their top speed of about 480 m.p.h. at 30,000 feet. This would be a job demanding the 600-m.p.h. speed of the *Shooting Star*. It follows that the selection of fighter characteristics depends in large measure on the nature of the opposition and that brings up the North Korean Red fighter aircraft.

Fighters mentioned in dispatches from

PRINCIPAL AIRCRAFT IN KOREAN ACTION

	North American F-51H	North American F-82E	Lockheed F-80C	Russian Yak-9U
Engine	Packard V-1650-9	Two Allison V-1710-143/5	Allison J33-A-23	Klimov VK-107
Power	1,380 h.p.	4,500 h.p.	4,600 lb.	1,800 h.p.
Wing span	37 ft.	51 ft. 3 in.	39 ft.	32 ft. 10 in.
Length	33 ft. 4 in.	38 ft. 1 in.	34 ft. 6 in.	27 ft. 10 in.
Normal gross	11,000 lb.	20,000 lb.	15,000 lb.	5,500 lb.
Top speed	488 m.p.h.	486 m.p.h.	600 m.p.h.	450 m.p.h.
Service ceiling	43,000 ft.	45,000 ft.	48,000 ft.	38,000 ft.
Range	2,200 mi.	3,500 mi.	1,250 mi.	800 mi.
Armament	Six .50-cal.	Six to 14 .50-cal.	Six .50-cal.	One 37 mm. One .50-cal.

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Korea identify them as Russian-built Yak aircraft. The wartime Russian Yak-9 (after A. S. Yakovlev, its designer) was about the equivalent of our wartime Curtiss P-40 *Warhawk* fighters. However, the current Red Air Force fighter is the Yak-9U, a substantially improved product. It is fitted with the new Klimov VK-107 piston engine delivering 1,800 horsepower, as compared to the 1,200 horsepower of the wartime Yak-9. This added power, combined with a redesign of the airplane which reduced its weight, brings the performance of the Yak-9U up to about 450 m.p.h. at sea level. This speed drops off sharply with altitude, however, and it is no match for the F-51H above 20,000 feet.

Comparative armament of aircraft in the Korean war varies widely. The F-80C and the F-51H both have six .50-caliber machine-guns. The F-82E also has six .50's as standard but it mounts a special armament nacelle between its two fuselages that carries eight additional .50-caliber machine-guns, giving it a terrific weight of fire. The Yak-9U mounts a 37-mm. cannon in its propeller hub. Although the effective range of aircraft armament depends heavily on the sights used and the skill of the marksman, with everything else even the 37-mm. cannon is effective at roughly twice the distance of the .50-caliber machine-gun. Both the *Mustang* and the Yak can mount high-velocity aircraft rockets (HVAR) so the score is even on this count.

If the Russians introduce jet fighters into the Korean war the entire situation will be changed overnight and the whole character of the tactical problem will be altered. To prepare for this eventuality, the Air Force has already shipped quantities of its pride-and-joy, the North American F-86A *Sabre* swept-wing fighter to Japan, where they are being limbered up for combat. Most obvious Russian jet candidates are the Yak-15 and the Mig-9, both of which the Russian Air Force has already assigned to advanced training duties, indicating they are "export" material. Neither of these would give our F-80C much trouble; actually, they would bring the battle up to the terms on which the F-80C fights best: high speed and altitude. The Mig-9 is a twin-jet design with a top speed of about 500 m.p.h. and a service ceiling of about 35,000 feet, both well-topped by the F-80C. The Yak-15 is a single-jet design with about the same performance as the Mig-9.

If the Russians send their later and faster jets into the Korean war, a new factor would be introduced. Planes like the Yak-21 and the four jets described in "Have You Seen," September FLYING apparently rival the F-86.

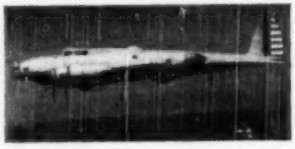
The entry of compressibility into fighter operation (touched on only rarely in World War II) transforms the historic contest of plane-against-plane into battles of pilot intelligence. The heavy fist on the throttle and sharp eye on the gunsight are now as hopelessly out-of-date as flying boots. The altitude-speed-range problem of handling the fuel supply of jet fighters has already been mentioned. In action, the most serious problem becomes the airplane structure and the modern jet pilot must be virtually a graduate engineer to handle his airplane intelligently. On these grounds the American fighter pilot need take no quarter from any other pilot in the world.

15 YEARS AGO

FROM the October, 1935, issue of this magazine:

A new two-place monoplane, powered by a standard Ford V-8 automobile engine, was produced by Arrow Aircraft in Lincoln, Neb. Using auto gas and oil, the Arrow's operating cost was only one cent per mile. Cruise was 100 m.p.h. and top speed 110. Tentative price: $1,500.

The Boeing 299—"fastest and longest-range bomber ever built"—was ready for test flights. It was constructed to AAF specifications which called for a top speed of from 200 to 250 m.p.h. at



10,000 feet, an operating speed of from 170 to 220 m.p.h., and a service ceiling of from 20,000 to 25,000 feet. Tests of the 299 (later designated the YB-17) were expected "to stamp the plane as the most formidable aerial defense weapon ever offered this country."

Sign of the times: The editor commented, "To our understanding of values, $500,000 is a lot of money for a single bomber, and yet that is the price the Government has just paid for the latest air giant." (Today, one *Constellation* costs more than $1,150,000, and one B-36 more than $2,500,000.)

Premier Benito Mussolini announced that the Italian government would give premiums to sportsmen flyers up to half the purchase price of new planes. Reason: to encourage more civil pilots who would be needed in event of war.

Eddie Rickenbacker gave the Federal Aviation Commission "something to think about." "In the next war," he predicted: (1) planes would fire cannon from the air; (2) whole armies would be moved by huge air transports; (3) airplanes would pick up tanks and drop them over enemy lines without landing.

TWENTY YEARS AGO

A Gee-Bee Sportster won the $25,000 All-American Air Derby speed race, with a top speed of 146 m.p.h. Racer sold for $4,980.

The first problem the Russian and American pilot would meet as they passed the 40,000-foot level would be a tremendous loss in maneuverability of their airplanes. Neither the Yak-21 nor the *Sabre* would be able to "pull" more than 2 to 3 G's in a turn, resulting in wide, loose maneuvers making dog-fighting a travesty of its World War I counterpart. Attempts to tighten the turns would only result in a stall followed by a loss of altitude of several thousand feet. Accompanying this stall would be severe buffeting of the airplane with accompanying high structural loads that can and have resulted in structural failure of the aircraft.

It is this "buffet boundary" of the high-speed jet fighter that requires a high degree of pilot intelligence. It is not precisely defined, either by engineering calculations or by the nature of its warnings. It does not occur in exactly the same way on an airplane each time it happens. Because of this uncertainty, pilots have learned that they can exceed the airspeed at which it first occurs by a "certain amount," the amount depending on the intelligence and skill of the individual pilot. The pilot who quickly slows his airplane at the first sign of buffeting may find himself overtaken and knocked down by an enemy pilot who ignores the warning. But the enemy pilot may then watch his own tail or wings shredded from his airplane in a space of seconds. Somewhere between these two speeds lies the "tolerable limit of buffeting," which exists only in the mind of the pilot.

It is not enough simply to "play it safe" with the buffeting limit. For example, a pilot may be in a high-speed dive on an enemy aircraft. His speed will increase until the first sign of buffeting. He cannot, of course, make a pull-out from the dive without exceeding the buffet limit, so that he has the choice of continuing his dive to a much lower altitude, where his Mach number will be decreased at the same airspeed, or of risking buffet failure of his airplane in making the pull-out at high altitude. This is the kind of choice that no amount of routine mass-production pilot training can teach; only the pilot's intelligence can solve it.

Another problem demanding not only intelligence but extremely alert senses and muscular coordination occurs with stability changes in the airplane as it approaches and exceeds its critical Mach number, which is quite easily done in a matter of seconds in a low-drag design. As the critical Mach number is approached, the down-wash over the tail is reduced resulting in a "nose-down" pitching moment on the airplane. (Although most high-speed aircraft "tuck under" in this manner at high speed, some are notorious for their tendency to "tuck up" at high speed!)

The pilot's natural reaction is to pull back on the stick. If he holds this pull too long and the airplane slows quickly, he will find the load factor has suddenly doubled and he has inadvertently stalled his airplane. If the airplane continues to increase its speed, he will find the control surface loads suddenly reverse themselves and require an equal angle and amount of push force to maintain level flight. An additional increment of Mach number and the control loads reverse themselves a second time, accom-

panied by a severe buffeting and the demand for a pull force far in excess of the strength of the pilot.

Only intelligence and experience can provide the pilot with the necessary knowledge for accurate detection of what is happening to his airplane. For example, buffeting and flutter both begin with about the same signals to the pilot. Transsonic flutter or "buzz" is associated with the airplane lift coefficient in much the same way as is buffeting but is confined to the ailerons rather than the aircraft structure. Ailerons have been shredded in seconds in extreme cases of transsonic flutter. Usually the severity of the flutter is increased instantaneously by an increase in speed, whereas buffeting severity increases only slowly. The pilot must be able to distinguish quickly between the two as the speed for one may be exceeded safely, while for the other it may not.

Engine speed, fuel-air ratio and tailpipe temperature must be handled carefully at high altitude to avoid a "blow-out" of the vital combustion. While this problem (in U. S. aircraft, at least) is being reduced rapidly by improved fuel spray nozzles, by improved igniter tubes and by higher spark energy—all designed to increase the ease of re-starting—altitude must be lost in the maneuver and a jet fighter with a dead engine at 40,000 feet provides easy meat for another jet with power.

These are only a few of the phenomena of high-altitude high-speed flight, a realm only now being explored. The shock waves may form on the wings unevenly, resulting in rapid lateral oscillations that ailerons are helpless to control. Buffeting may habitually occur on the tail of the airplane on many flights, then suddenly manifest itself on the fuselage or wings. Engine power may vary erratically with accompanying fluctuations in fuel-flow, resulting in complete interruption of the carefully-planned and controlled mission plan. All of these problems require intelligence and skill while hurtling along at 600 or 700 m.p.h. eight miles above the earth when the speed of decision may determine safety or destruction of the airplane.

The Korean war—to-date—has not indicted the jet fighter under fire. It has brought into sharp relief many of the basic technical facts that have been known all along by those who design, fly and command them. The low-altitude ground-cooperation type of operation that characterized the initial stages of the conflict demands expressly the characteristics of the piston-engined fighter, which the U.S. has developed to the highest state in the world. If the Russians transform it into a high-altitude high-speed jet war, the U.S. has not only the combat equipment but the native pilot intelligence to cope with whatever situation is presented. We have spent billions of dollars in aeronautical research, aircraft development and pilot training in jet aircraft since V-J Day and have learned most of the lessons inherent in the problem. We don't know all the answers: but we know more of them than the Russians!

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Low and Slow

(Continued from page 27)

"Never Volunteer," and asked for flying training at Fort Sill.

The course at Fort Sill included all that is learned for a private license (CAA), plus thorough training in aircraft, engines, maintenance, navigation, meteorology, radio technique and artillery fire adjustment. A. T. figured when he emerged as a staff sergeant in April, 1943, that he had learned everything there was to know for a commercial license. On top of that he had learned methodically everything there was to know on how to *lose* that commercial license. The fact is, he had learned how to preserve his own life in combat.

A quick tour of duty at Camp Roberts in California commissioned A. T. as an artillery officer. Shortly afterward he was shipped to England, together with a well-crated L-4, and liaison mechanic (also trained at Sill). From England, he flew his *Cub* over the Channel and joined his unit in Western France.

Even after 300 combat hours, A. T. was not content with slugging it out with the Messerschmitt minions, for at the war's close he took a refresher course at Sill, then lit out again for Germany. This time he was assigned to the United States Constabulary near the Czech border.

Today, A. T. has just finished a course in Bell helicopter flying at Fort Sill. He is stationed at Fort Knox, Ky., on training duty. He and his fellow officers are no longer "Liaison Pilots." Their new title is "Army Aviator."

• • •

What is the trend in Army aircraft? First, there seems to be no conclusive evidence that rotary-winged machines will replace the fixed-wing airplane. The helicopter has proved its usefulness as a "special purpose" piece of equipment only. Its high cost of maintenance will have to be overcome before it can be fully adapted to field use.

In the meantime fixed-wing airplanes probably will be developed into two classes: (1) the light two-place tandem tactical plane, and the (2) multi-passenger light transport type aircraft.

• • •

The Artillery is not the sole possessor of a private air force. Ordnance, Infantry, Cavalry (Armored), the Engineers, and the Signal Corps also have trainees at Fort Sill. The course goes like this:

- Five and a half months of basic at Conally Air Force Base, Waco, Tex., under the auspices of the Air Forces. At the end of this time, cadets are awarded wings and are sent to Fort Sill.
- Ten weeks at Fort Sill are spent in advanced training: artillery fire adjustment, reconnaissance, tactics, aerial photography (K-20's only) and techniques perfected in the late war.

• • •

As Lieutenant Pumphrey sat in the sunshine in front of the Air Section Headquarters one day recently, he got orders to report for a training assignment. Methodically, he draped his parachute over his back and systematically seated it in the front cockpit of his Aeronca L-16.

Maj. Oliver J. Helmuth, tall, handsome and tough, began pounding training orders into the ears of the flyers. Mechanics were alerted. Ryan *Navions* (L-17's) and Aeroncas sparkled in the morning sunlight. Off at one side, the special purpose, grasshopper-eyed H-13B light helicopter warmed up.

A. T. wondered whether it would be a dry-run strafing mission with boys on the ground setting off a line of dynamite charges as he swooped through. Or would it be an actual mission, such as he ran a few months back when the Air Section was asked to look for a lost woman near Bowling Green, Ky.? She was found in her own barn, quite safe, a few hours later. Perhaps it would be something like the Vincennes, Ind., mission when they did flood evacuation and rescue work.

He was right the first time. The major told them that a "regiment of enemy infantry" had dispersed over the eastern portion of Fort Knox. A. T.'s battalion sector covered part of the terrain, and his mission was to cover that area in the Aeronca and to give the battalion air eyes in the sector.

Heavy cumulus darkened the sky. A. T. remembered the story of the general in Southern France who was on observation over the front lines in an L-4. He turned to the lieutenant-pilot in the *Cub* and said:

"Lieutenant, aren't those clouds getting pretty dark?"

"Clouds, hell, sir. That's flak!"

"Lieutenant, I just remembered an engagement with General Bulmore. Let's get the hell out of here."

A. T.'s eyes wandered over the line as Major Helmuth continued his discourse. That pint-sized Bell helicopter, the H-13B, is a sweet job to fly. Too bad it doesn't maintain as well as it handles. It has a nice cruise, no stall—and is small enough to put into a double-car garage.

As the Major finished assignments for the mission, A. T. glanced toward the *Navion* L-17 his buddy was flying. To the liaison pilots it's a "flying sedan." Both comfortable and rugged, its control at low speeds—or any speeds—is superb. Used to have a lot of trouble with that fuel system, but it's licked now. The canopy system might be improved a little. That ARC-12 radio is out of this world, couldn't be better.

• • •

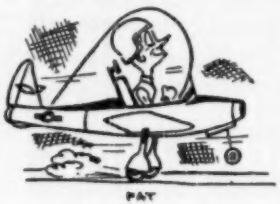
In radio contact with the tower, Lieutenant Pumphrey dragged his L-16 up and away. A few minutes later he was on patrol, checking carefully on each side of his sector for any tell-tale signs of enemy advance.

A grey-white burst of cannon fire attracted his attention. Up a wooded ravine to the left he saw tiny figures, like ants in heavy grass. With reaction born of experience, A. T. called identification to his battalion. "Fire Mission, over."

A voice from battalion headquarters answered.

"Send your mission, over."

"From concentration one zero, right 800, up six zero, add 1,000, fuse time in



PAT

JET LINGO

IF YOU'VE ever done any hangar-flying with jet pilots, you're probably hep to their lingo. But if you're one of the uninitiated, here are some of the latest jet terms as compiled by Republic Aviation:

BINDERS—Brakes.

BLOW-OUT or FLAME-OUT—Jet engine flame or fire goes out.

BLOW TORCH—Term applied to jet engine or to plane using jet engine.

CHOMP ON THE BINDERS—Apply brakes.

CONSOLE—Pilot's cockpit control panels which, because of the many switches and knobs, remind you of an organ console.

EJECTOR—The aft portion of the tailpipe through which jet gases escape into the air.

FAT or HAD IT MADE—Any completely successful operation such as a landing, take-off, target run, etc.

FLUTE—Name given to head of control stick which is filled with buttons and controls.

FLUTE HAPPY—Control stick "happy," or when pilot does everything that's in the book—as well as many things which are not.

GO HANDLE—Jet engine throttle control.

HOSE NOSE—Pilot dressed with helmet and oxygen mask.

HOT SEAT—Pilot's ejection seat.

JET JOCKEYS—Pilots who fly jet aircraft.

LITTLE JOE or GANG DRAIN—Overboard fuel drain which, on the F-84E, is located near the ejector end of the tail section.

MAN FROM MARS—Jet pilot with full flight equipment: helmet, chute and one man dinghy, Mae West, oxygen mask, bail-out bottle, goggles and flying suit.

MICE—Tailpipe inserts which facilitate adjustment of nozzle area and thus permit maximum thrust.

MUSCLE STRETCHER—A boost system which augments pilot's effort to move elevators on some types of planes.

OIL BURNER—Term applied to jet engine because it uses an oil-type fuel.

PIN BALL MACHINE—Reference to instrument panel with all of its instruments, dials, flashing lights, etc.

PANTS DUCT—Where air-in ducts meet to pass air into the compressor section of the engine.

PANIC BUTTON—State of emergency when pilot mentally pushes buttons and switches in all directions.

PIGGY-BACK PUMP—Dual fuel pump.

PUCES—Brake lining discs.

RAILROADING — Inadvertent shuttling between normal and emergency fuel systems.

SQUIRREL CAGE—Highly active section of "brain" department such as jet maintenance and engineering offices, where mechanical and flight problems are worked out.

SQUIRTING—Pertaining to jet flight.

SQUIRT JOB—Jet plane.

effect, will adjust, over." (The numbers are in yards.)

Battalion repeated his instructions, then: "Baker, fuse, time in effect, three volleys center range, when ready, concentration number one one, over."

"Roger, standing by, over." Lieutenant Pumphrey made it possible for his battalion to adjust the 105's to a new target without ever seeing it. Then volley dust, with the voice in his ears, "On the way."

The shells missed their target slightly. Lieutenant Pumphrey banked his Aeronca back over the sector and corrected the fire, "Left, five zero, drop 100, over."

Battalion repeated, then, "On the way."

Another volley lobbed into the ravine. Again there was a near miss. A. T. methodically corrected again, "Right, one zero, add five zero, fire for effect, over."

After checking the terrain for signs of the enemy, Pumphrey radioed in, "Cease firing, end of mission. Platoon of infantry neutralized."

* * *

Winging his way back to Godman Field, he remembered the "who-o-o" of lobbing shells. Sometimes, during World War II, the L-4's at observing altitude were right in the trajectory, and with a small puff of smoke were annihilated. He pondered the problems of the liaison pilot and the general who were checking advance points at 1,500 feet. The general requested that they fly lower in order to observe better. The pilot protested, saying they should fly high enough to stay out of small arms range.

"Lieutenant, those boys down there won't shoot at me. I'm a general," he said, to ease the lieutenant's concern.

"Yessir," the pilot replied as he maintained 1,500 feet altitude, "but, General, they'll shoot at me, and they might accidentally hit you." END

The Paraplane

(Continued from page 25)

plane, according to Lanier, "could be certificated and manufactured in 1951."

But because of the Korean war, Lanier is temporarily by-passing this advanced model to rush a high-winged design for observation and reconnaissance purposes. This same design, he says, would be suitable for four-place civilian purposes later.

The research craft, now flying, is powered by a 90-h.p. Continental engine. It cruises, say Lanier, "at any speed between 30 and 120 m.p.h.," and is equipped with Lanier's unique scoops and vacu-cells—the secret behind the *Paraplane*'s extraordinary performance. (See September, 1949, FLYING.)

The scoops in the lower leading edge of the wing look like movable slots. They can be raised, lowered or closed. When open, they create extra lift. Controlled by a crank in the cockpit, the scoops are left open for take-off and for landing, and they are closed while cruising.

The vacu-cells, which also resemble movable doors and are adjusted from within the cockpit, are located on the upper wing surface and help create lift. When the vacu-jets (scoops plus vacu-cells) are open, it is not possible to spin or stall the airplane. The vacu-cells are opened wide during glides and are partially opened during take-offs but, like the scoops, they are closed while cruising.

The *Paraplane* has been tested, both in wind tunnels and in flight, at Princeton University. The Princeton tests were started on November 1, 1949, with the supervisory assistance of William Brabson of the Army Ground Forces and Arthur Clemen of Princeton. Tests were continued until June, 1950, when Lanier received reports approved by the research department of the university. Lanier says they offer "written proof of the plane's excellent stability and control at low speeds."

Last year, the builders were having difficulty with the plane's center of gravity—but whipped the problem by lengthening the motor mount two feet and rebuilding the stabilizer and elevators with one-third less weight. As a result, the plane now trims safely.

The research model has flown about 100 hours, and has been flying for over a year. In these flight tests, it has demonstrated inherent stability—and a steep gliding angle without increased speed, thus permitting it to climb and descend over high obstacles. Lanier, whose headquarters are at Marlton-Medford Airport in New Jersey, says the *Paraplane* "lands something like a parachute in case of engine failure." He claims a 40° gliding angle is easily possible.

Specifications for the two-place research craft are: height, 6 ft. 4 in.; length 22 feet; span, 20 ft. 5 in.: wing loading, 12 lbs. per sq. ft.; gross weight, 1,325 lbs.; empty weight, 870 lbs. (production model will be 600 lbs.). The production two-place version will be of all-metal monocoque construction. Lanier also has plans for a two-place roadable version with folding wings, powered by a 90-h.p. engine. It would, says Lanier, be a complete unit ready for air or ground travel at all times. END

★ FLYING TIP ★

AS SOON as I get a new sectional chart, I take a red crayon and color all the circles that denote airports. This saves a lot of time in picking out fields as the red marks stand out prominently on the chart.

And, most important of all, it is especially handy for spotting alternate fields on cross-country when I'm busy with the controls.

Richard D. Stimson

* * *

Got any tips you'd like to pass on to other pilots? Contributions should be typewritten, not over 200 words, and accompanied by a stamped, self-addressed envelope. Payment for acceptable material will be made at regular rates. Address "Tips" Editor, FLYING, 185 N. Wabash Ave., Chicago 1, Ill.

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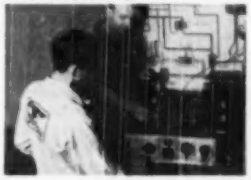

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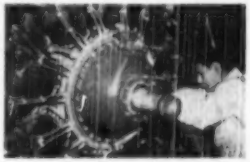

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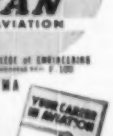

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Four-Place Training

(*Continued from page 34*)

builds up tenseness in the type of person we're trying to reach. It emphasizes stalls, forced landings, spins. It constantly builds up a subconscious fear in the conservative student. Around-the-field flying bores him; stalls and spins wrap his stomach in knots; and the whole business makes him feel like dropping it all. And many do, after the first dozen lessons or so."

So Brown's new program emphasizes how to stay out of trouble, rather than how to get out of it once you're in trouble. It emphasizes the fun in flight training, emphasizes that flying's a good way to go places with your friends. And it teaches how to get to those places.

Among Brown's backers are many CAA officials and plane manufacturers, including W. T. Piper, president of Piper Aircraft Corporation, and Don Flower, general sales manager of Cessna Aircraft.

Flower pointed out the safety record made last year by pilots of company executive planes—only 0.5 fatalities per 100 million passenger miles. That compares with 1.7 fatalities for the airlines, 7.5 fatalities for private automobiles—an example of what comes from good flight training and a yen for safety. Flower believes other personal aircraft could have a similar good safety record if pilots were taught more cross-country flying.

Under the program, students have to fly a minimum of 45 hours (30 hours of observer time and 15 hours actually at the controls for each student) in four-place planes. Then they have another 10 hours of solo, either in two- or four-place planes. Conventional training, on the other hand, requires 35 hours flight time.

The curriculum is divided into four stages:

● *Fifteen hours in four-place aircraft.* Of this time, each student gets five hours at the controls, 10 hours riding in the back seat. Instruction consists of short trips to strange fields. Time between fields is used for familiarization, navigation fundamentals, weather and wind effects, judgment of altitude, 360's and 720's, identification of landmarks. Rectangular courses, glide control, stall recognition are practiced at each airport. First results indicate students with five hours at the controls and 10 hours of back-seat time are as adept as the average 10- to 12-hour student trained by conventional methods.

● *Five hours in two-place aircraft.* In this stage, the student reviews fundamental maneuvers, stall recognition, power-on approaches, wheel landings—and then solos.

● *Thirty hours in four-place aircraft.* In this stage, each student gets 10 hours at the controls, 20 hours in the back seat. He flies more cross-country, gets more practice on airport patterns, precision power-on approaches, wheel landings, power-off and three-point landings, stall recognition and recovery. Brown estimates the student in the first and third stages will have visited 30 to 40 strange airfields.

● *Five hours in two-place aircraft.* This stage is used to prepare students for flight tests, to polish his precision and confidence, and to give him experience in spin recovery, stall recognition, power-off and power-on approaches, wheel and full-stall landings, eights and rectangular courses, and solo cross-country.

Backers of the program are encouraging schools to let students pick their own destinations on the flights, particularly if they have business in various cities or would like to take a week or two to visit vacation resorts.

For example, Brown tells of one group of three businessmen who had a long business trip to make together, visiting various cities scattered about the country. So they hired an instructor and a four-place plane, made their rounds—and came back as three skilled students, ready to take their flight tests for private tickets.

All this helps to make proficient pilots out of the students, says Brown. "These flights teach them how to use their radio and other facilities for navigation, make them feel at home in any airfield, large or small—and teach them their responsibilities in taking care of the aircraft overnight."

Brown also points out that the program has other advantages, both for students and operators:

(1) Students riding in the back seat, unhampered by manipulating the controls, get much from watching instructors demonstrate flying techniques. Also they observe other students' reactions and mistakes.

(2) By flying in groups, students relax, their natural fears and tensions are eased, and they pick up good flying habits quickly.

(3) Students don't easily become discouraged. They're able to compare themselves with others of equal experience, rather than with skillful and experienced instructors.

(4) Natural competition among students stimulates progress.

(5) Students learn to fly in a plane that is generally more satisfactory and has more utility than most two-place trainers. The new "training plane" is faster, is equipped with two-way radio and other air navigation aids—adding to students' skill and experience.

(6) Operators are given a sound reason to own aircraft suitable for family rental and charter work.

(7) The operator can merchandise a tangible product; he can sell *flying* rather than *flight training*. END

Nudist Airpark

(*Continued from page 29*)

four nude people waving toward my plane from a hilltop, I knew that there was no doubt this time. Reed had told me to fly north through the Lehighton Gap and to look for the field just two miles due north. I followed his directions easily; on a clear day the Gap is visible a good 40 miles away. I came through, began a let-down, heard my wife let out a startled gasp and knew that, as usual, she had been the first one to spot the field.

I dragged it a couple of times, of course, before coming in. The strip looked rather short, but otherwise okay. There were no markings to indicate just where to sit down, but I had a pretty clear idea by the way the people on the ground lined up; I'll bet that no other pilot ever had an approach set-up like that. I warned the back seat passengers to tighten up their seat belts, turned onto the final and set up a graveyard glide. The ship touched down nicely onto a field which was rough enough to make a crocodile swallow his uppers. I hit the brakes as soon as I could, bumped to a stop and cut the mixture. The prop had barely stopped turning when the plane was literally surrounded by about 70 or so people who were all congratulating me on having just landed and survived the experience. They were packed around the plane and the only pair of pants in sight were those covering my landing gear.

The funny thing about landing in a nudist park is that if you know what's coming, it doesn't seem to bother a bit. We all trooped down to the swimming pool where the canteen yielded up some cold soda and a chance to sit down and rest. In the water a number of people of all ages were swimming and paddling as people do everywhere except for the fact that there wasn't a bathing suit in sight. In the shallow end a bunch of youngsters, boys and girls, were playing together and splashing madly, apparently unaware that there wasn't as much as a stitch amongst them.

Over on the tennis court a game was in progress between a man wearing a T shirt and a girl who had donned a sunshade. The volley ball court was busy, some more kids were playing shuffleboard, while on the broad lawn a number of people were just loafing, reading, or listening to portable radios. Just then the prettiest redhead I'd ever seen came up to tell me that we had better wash up for dinner. Each one of our party had a nudist escort, so I shortly had the pleasure of sitting down to a turkey dinner with a charming companion who wore a happy smile and a rose in her hair.

About three in the afternoon I began to look for the rest of my gang to talk about starting back. I couldn't find them anywhere. Reed invited me to take a swim in the pool, which invitation I got out of by explaining that the fellow and his wife with me were bigwigs and that I had better not on their account. I walked up to the pool again, still looking, and heard my name called. Mr. and Mrs. Bigwig were waving at me from the center and yelling, "Come on in,

the water's fine." I know when I'm licked. I accepted the loan of a cabin and got into uniform. Then I took a deep breath, flung open the door, and stepped bravely out and just about knocked down the redhead who was walking by. She looked me squarely in the eye, said "welcome to our midst," and that was that.

Before we left I gave Reed the address of Max Karant [AOPA Assistant General Manager] and suggested that AOPA be notified of the new field. I also recommended some improvements if any traffic at all came in.

The Sunday after the AOPA newsletter came out with an announcement of the nudist landing strip, I flew up to see if there would be any business. There was. Two of us were busy all day parking planes and directing traffic; generally we had three in the pattern at the same time. We drew everything from a 40-h.p. *Cub* to a *Mallard* and ran out of space to park the planes. The AOPA has a long and powerful arm. By mid-afternoon the pool was full of airborne swimmers while a visitors vs. regulars volley ball match drew a large gallery.

That day proved that the airport was going to do business and that improvements were definitely in order. I talked it over at length with Reed with the result that he decided to go all out. Work began immediately. I laid out plans for grading and lengthening the existing runway, spotted the locations for corner markers, indicated where some trees should come out, and found an excellent site for a six-foot high air-marker. Personally I am highly air-marker conscious and try to get one put in every time I have a chance; many a student pilot has saved his skin by finding out where he was and where he was not because of an air-marker. That afternoon Reed and I discovered that by purchasing two more farmers' fields, a 2,000-foot clear approach runway could be constructed.

Within a week everything was in full swing. Graders and rollers were hard at work. The rough spots disappeared and the rocky soil was packed down into a hard, smooth surface. The new 2,000-foot runway was cut and cleared in two days. Corner markers built to CAA specifications were put in place and painted international orange. The parking area was rolled smooth and tie-down stakes sunk into place. The Pennsylvania State Aeronautical Inspector arrived and officially licensed the field. The CAA arrived from Allentown to check on the traffic pattern. Meanwhile the planes continued to come in so that Reed had to hire a full-time line boy. The gas company arrived to check on the location for the fuel pumps.

Just five weeks from the day of dedication a rock-upholstered, rough-as-a-cob narrow strip had been converted to a sizable airport able to handle almost anything likely to want to land there. Apart from the fact that the short runway has a $2\frac{1}{2}$ per cent grade which makes caution advisable in landing on it towards the west, the field is at this moment an exceptionally good one without a single dangerous obstruction to interfere with any of the runways.

So far, the experiment has worked out astonishingly well. A large number of pilots and airport managers have flown in, including some whose names are known wherever planes fly. Many of them have become members of the group together with their wives and families. Arthur Godfrey has made frequent reference to the field on his broadcasts. Many newspapers and columnists ran stories on the field, a few doubting that it really exists. Definitely it does. It will be on the next New York sectional chart and in the next Airman's Guide. The pictures accompanying this article are the first to be published anywhere.

Just a few evenings ago Reed Suplee, the owner of the new field, his wife Zelda, and I stood on the edge of the now completed airport watching the sun sink behind the Pennsylvania hills. The view from the field was a glorious one. My plane was tied down for the night; the setting sun was reflected in a bronze glow off the metal wing. Darkness had just begun to sharpen the outlines of the surrounding mountains when a small plane came into view, flying back and forth in a zig-zag pattern up the valley.

We waited until it had worked its way within view of Sunny Rest when it swung once more and made a bee-line for the field. The little *Champ* made a quick pattern, landed and taxied up. Two thoroughly frightened young chaps were aboard; they were lost but good. They had two gallons of gas left, no night lights and were more than 40 miles off course. Had they missed Sunny Rest, they would have found no other field for many miles in the direction in which they were going, and few likely places for a forced landing.

After they recovered from their surprise at finding out where they were, we tied the plane down and sent them off with Zelda towards a hot supper and a telephone to reassure anxious parents who were waiting. Then Reed turned to me.

"I know just how much this airport has cost me, Don," he said, "and I feel as of right now that I have gotten my investment back in full." I knew what he meant. As we walked back through the camp together, I wondered myself what will be the next chapter in the story of the world's first nudist airport. END

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How to Join

(Continued from page 17)

tive duty, whether on voluntary or involuntary basis, would be in present grades and in immediately usable skills.

Air Force officer requirements on an individual basis are predominantly in the grades of captain or lower, although certain critical specialists, as well as officers who may be called to duty with their units, will be required in other grades. The greatest need for Air Force officers is for those already trained as navigators, bombardiers, communications, radio and radar specialists, medical and dental officers, weather specialists and armament officers, although officers in most other categories will be accepted on a voluntary basis up to a specified level.

Enlisted airmen whose specialties are most urgently needed include aircraft and engine mechanics, radar and radio specialists, communications personnel, armament specialists, and personnel in the medical fields.

Enlisted airmen, even though they have not been active in the reserve since leaving the Air Force, may still volunteer for a one-year term of active duty through normal recruiting and reserve channels. The particular need is for airmen who have special military skills, especially those listed above.

Army officials have indicated no particular requirement at this time for additional liaison pilots, artillery spotters or other specialists in this category. Neither has the Air Force. The Army is, however, accepting voluntary requests for active duty from Army liaison pilot reserves in company grade (captain or below), if they meet age requirements—that is, if they are captains, they must complete the tour of duty for which they volunteer before they reach 45; first lieutenants, 41, etc.

There is no present program set up by the Army for civilians to enlist for Army liaison pilot training.

Navy is accepting applications for voluntary recall to active duty for both reserve officers and enlisted personnel for a minimum of one year of active duty. At the same time, it is recalling involuntarily certain critical personnel. Quotas in the Navy will be filled as far as possible from personnel in the organized reserve who are considered qualified for active duty. Members of the volunteer reserve are not expected to be recalled involuntarily except as necessary to fill specific quotas not procurable from the first two named sources.

Several units of Navy's Organized Air Reserve already have been recalled to active duty, although numbers and designations are being withheld for security reasons. Since the end of World War II, Navy has supported more than 350 organized and fully-manned squadrons in fighter, attack, patrol, transport, composite and blimp categories. Some of these have been called up as units.

All Marine Air reserve squadrons have been activated. Organized and inactive Marine air and ground units are also being called to duty.

Former Naval and Marine pilots and other aviation personnel, both officer and enlisted, are being accepted on a voluntary basis, although Navy has made known no particular urgency for the return of this type of personnel on an individual basis.

Thus far, the Coast Guard remains under Treasury Department jurisdiction, and no steps had been taken at press time to return it to the Navy, as in World War II. However, plans are afoot to call to active duty some Coast Guard reservists in categories not yet revealed.

Applications for commissions of pilots or other aviation personnel who are not members of the reserve and who were not in any of the services during World War II may be made at recruiting offices of the various branches—or the necessary forms may be obtained from Headquarters, Department of the (name your branch), Washington, D. C.

If you're already a member of the reserve, you can apply through your reserve unit instructors or through Washington headquarters. Navy applicants should address the Bureau of Naval Personnel in Washington.

Enlistments are handled, as usual, through recruiting offices set up throughout the country by the various services. Ex-Air Force officers may request recall through the nearest reserve unit or by application to the headquarters of the nearest numbered Air Force. National Guard members, officer or enlisted, may make their applications for active duty as individuals through their own state's National Guard headquarters.

That's about the story, to date. As plans move forward, more will be published in the daily press.

In any event, if you're in good physical condition, if you have knowledge of any phase of aviation from pilot to dispatcher, navigator to ramp man, you have an excellent chance of getting a billet in your specialty.

You may not get your old job back—but you'll keep whatever grade or rating you may have. And you'll be in U. S. military aviation. END

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Korean Dogfight

(Continued from page 15)

planes. They opened up with .50-caliber machine guns. Our flight broke up and so did theirs. I started firing at their lead ship with the rest of my flight following. When we were dog-fighting all over the sky, I fired again and pulled off and my No. 2 man, Sandlin, saw the SU-2 spinning in.

We were all over the place then, giving them hell. After the SU-2 went in, I pulled up to 8,000 and rolled over to check the airstrip and this aircraft that resembled the P-63 (many Bell P-63's were sent to the Soviets by the United States under Lend Lease in World War II) was coming up after having laid an egg down on the strip. I made a head-on pass at him, after which he appeared to be damaged. I did a partial loop and came around on his tail and chased him up to the 38th parallel where he disappeared in a northerly direction. I believe I fixed him for good.

In the meantime, my No. 4 man, Fox, who'd also gone down after the dive-bombers to break up the attack on the airstrip, had given the invaders one nice hard time. Just as he'd get in behind one of the dive-bombers, an IL-10 would come up on his flank. So finally he managed to get in behind two of the enemy IL-10's and got two of them—just like that—one just north of the airstrip and one southwest of it. The remaining aircraft were pouring lead at Fox like mad but he managed to down his two and get out without a scratch.

My No. 3 man, Element Leader Burns, got one too, an IL-10, while the dog fighting was going on.

I was worried about Sandlin because one of his tip tanks had stayed on. When we went down after the aircraft that was bombing the airstrip, Sandlin went too but he snapped and it threw him back into the middle of the other enemy aircraft. He fought them for about 20 minutes and shot one down in a spin. It was an LA-7. He followed it down until two of the IL-10's got on his tail, so he simply pulled up into a small cloud, went through it, dove on deck and headed home. I didn't have to worry about Sandlin with his one tank still hanging on—he managed to take damn good care of the situation.

With the score standing at six down and none to go, Fox also headed for home and Burns and I stayed over the strip for another half hour. Burns had a chunk out of his left wing where a piece of the plane he'd fired on had hit his leading edge.

There was nothing more around to fight so finally we returned uneventfully to base in Japan. It was nice to see the hills of home and the pale green paddies coming up and know we were all safe in.

The IL-10's are heavily armor-plated on the bottom and the sides though, and hard to knock out. They're not very maneuverable with all that armor hanging on them. They're used mostly for strafing, bombing and anti-personnel work. They've got a pilot and a gunner

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in the rear seat and are mounted with a couple of machine guns. They do only about 180 m.p.h., I'd say.

The pilots of the planes that look like our old P-63's seem to be better. There appears to be some mutual support between these aircraft and they use fairly decent tactics. They're much faster than the IL-10's, do about 280 to 300 m.p.h. and are extremely maneuverable. Yak 9's are about the same as a '51. They could possibly turn with a '51 and they also have better pilots who seem to use old German tactics—they're pretty good.

I think we've got superiority in the air so far. We've got more ships and better pilots and better tactics. Once in a while you run up against a whole flight of them but our planes are so much faster and better piloted that it's not much sweat to do what we did.

Weather conditions the day we were over were very good; it was sunny and we had good visibility. However, it's the rainy season in the Far East and the weather fluctuates from bad to worse most of the time, which may prove some handicap. The North Korean planes are of a very dark olive drab color and hard to see when flying on the deck.

All the aircraft I saw had the North Korean flag insignia on them, a large red star with a faint blue circle around the star.

All in all, general battle conditions seem to be in our favor so far. Anytime four of our aircraft will get you six of theirs, things are looking up, pal. END

The Mail Box

(Continued from page 7)

hours), he immediately rules it out as too dangerous in a single-engined plane because I don't have an instrument rating.

What does a private pilot do if he doesn't want to get an instrument rating? Why is it dangerous if you have a good plane and if you've also got a competent instructor?

R. O. McGEE
Gainesville, Ga.

● The answer to your question has to be a matter of opinion. The opinion that it is all right to go cross-country at night in a single-engined airplane without knowing how to fly on instruments is correct if nothing happens. It's wrong, though, if you fall down and bust your prospects.

You go on instruments at night without ever knowing it. You can't see poor visibility coming. You can't pick out a field to land in if your engine goes poop.

It looks to me as though you have a darn good instructor and if I were you I would take his advice. Any man who can fly in the Navy for 4,000 hours is a man who is very smart or very lucky. Being lucky is all right and very handy at times, and one of the best ways to be sure of being lucky is not to bet until you hold the right cards.—H. S.

Dear Captain Sheridan:

I've just made a trip to Mexico City in my car and after that rugged drive over the mountains, I've sworn that the next time I'll go by lightplane—probably a Stinson *Voyager*.

I'd really appreciate some words of advice . . . about how to fly over the mountains from a veteran who makes this trip frequently . . .

T. H. CAPERS, M.D.
Temple, Tex.

● My best advice is to go to San Antonio and take a Dizzy Six flown by Hy Sheridan. But if you're set on going in a Stinson, why, hark:

Fly to Tampico and then go straight over Pachuca. Pachuca is the pass through the hills going into the Mexico City valley. In this way you will have the fewest possible mountains to fly over. Don't go over the pass under 10,000 feet.

Plan your flight, if it is between March and November, to make the Tampico-Mexico City leg in the early morning. In the afternoons and evenings you will see more lightning than you have ever seen before.

The airport at Mexico City is 7,500 feet high. Allow for that in load and carburetor setting, mixture setting. Watch the hell out for ground loops at Mexico City—you land fast.

When flying over the mountains, in Mexico especially, don't believe your eyes as to relative altitudes of peaks with respect to how high you are. The air down there has the darndest refraction habits you ever saw. While flying across there at night I have taken a sextant sight on a star 30° below the horizon. You will seem to be as much as 2,000 feet above a ridge and when you get there find you are 2,000 below it.

Don't fly up any canyons. Don't approach a ridge or mountain from the lee unless you have plenty of altitude; air cascades are common.

It isn't at all dangerous if you use horse sense, but then if you really had horse sense you'd take a horse . . .—H. S.

EDUCATE THE PRESS

Here is something that no doubt has irritated many other persons who fly. Only yesterday I talked to a ground lubber who insisted—in spite of logical explanations—that an airplane will "fall" straight down the very instant the engine quits. Like many others, he had all the misconceptions that go with fear of flight.

But what really made me feel like pulling my hair out was picking up the evening paper only a few hours after talking to this guy and reading another of the many garbled newspaper accounts of a plane crash. No factual explanation, just PLANE FALLS INTO SWAMP . . . etc.

What can we who fly do in defense of this argument from a non-flyer: "Well, what about all the big UNEXPLAINED crashes that you READ about?"

If the public is ever going to be educated in this matter, the press must be educated first. . . .

JOHN D. PRUETT
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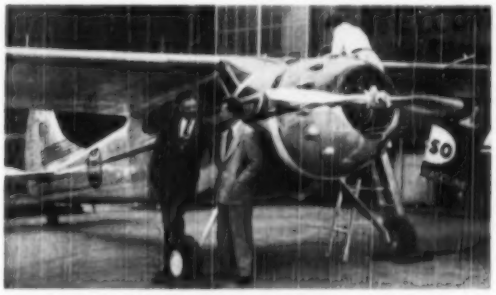

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